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FARMERS' BULLETIN NO. 25 FIRST PRINTING
DOMINION OF CANADA—DEPARTMENT OF AGRICULTURE

AN ECONOMIC ANALYSIS OF THE SHEEP RANCHING INDUSTRY IN WESTERN CANADA

LAWRENCE E. KINDT

DIVISION OF FARM MANAGEMENT
AGRICULTURAL ECONOMICS BRANCH

Published by authority of the Hon. JAMES G. GARDINER, Minister of Agriculture
Ottawa, Canada

ECONOMICS BRANCH

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FOREWORD

This publication deals with an economic analysis of the sheep ranching industry in Western Canada. The methods and problems of management and systems of organization on sheep ranches in Alberta, Saskatchewan, and British Columbia are discussed. Climate, historical development, and other data related to the subject have been incorporated in this report, together with the detailed study of three years' business on 100 sheep ranches in Western Canada. The general approach used by the author in the analysis and presentation of survey information has been to indicate the conditions out of which arise the major problems of the industry, and then in turn, to discuss these problems and where possible, to suggest remedies. The survey which provided the information was sponsored jointly by two branches of the Dominion Department of Agriculture; the Experimental Farms Branch assumed responsibility for technical assistance and contributed the major portion of the funds necessary to finance the project; the Economics Branch accepted responsibility for the supervision and conduct of the work.

Preliminary reports dealing with certain aspects of this study were published by the Economics Branch in mimeograph form in 1933 and 1934. In addition, the following articles dealing with the study appeared in *The Economic Annalist* under the dates listed. "Economic Aspects of Fattening 20,000 Lambs in Southern Alberta," May, 1931; "The Range Sheep Industry," January, 1932; "Financial Summary of Twenty British Columbia Sheep Ranches," April, 1932; "Some Problems of Range Sheep Industry in Alberta and Saskatchewan," January, 1933, and "Percentage of Lamb Crop and Weight of Lambs in Relation to Ranchers' Income," March, 1933.

Grateful acknowledgments are made to the sheep ranchers of Western Canada for their co-operation in providing data on their ranch operations; also to N. T. Macleod, Secretary, Southern Alberta Sheep Breeders' Association, Lethbridge, Alberta; G. S. Herringer, Secretary, Southwestern Saskatchewan Wool Growers' Association, Maple Creek, Saskatchewan; Miss M. E. Lauder, Secretary, British Columbia Sheep Breeders' Association, Kamloops, British Columbia; W. H. Fairfield, Dominion Experimental Station, Lethbridge, Alberta; L. B. Thomson, Dominion Experimental Station, Swift Current, Saskatchewan; and to S. E. Clark, Dominion Range Experimental Station, Manyberries, Alberta for advice and assistance in connection with the field work.

Finally, the writer wishes to thank Mr. W. S. Benson, Canadian Co-operative Wool Growers and Mr. C. V. Parker, Economics Branch for assistance in collecting data; also members of the staffs of the Economics Branch and Experimental Farms Branch, Dominion Department of Agriculture, and the Agricultural Economics Division, University of California, for guidance received in the conduct of the study and preparation of the manuscript.

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An Economic Analysis of the Sheep Ranching Industry in Western Canada

BY

LAWRENCE E. KINDT, M.S.

Agricultural Economics Branch, Department of Agriculture, Ottawa

INTRODUCTION

The difficulties at present experienced by those engaged in sheep ranching in Western Canada are in a large measure traceable to a combination of unfavourable conditions associated with the marketing of lambs and with the development of the range area over a considerable period of years. These conditions have been the subject of much discussion among those interested in the industry, and they led eventually to requests that the Dominion Department of Agriculture increase the scope of its services on behalf of the sheep rancher.

As a result of such requests, it was decided in 1930 that an economic survey should be undertaken to determine: (*a*) the factors responsible for the success or failure of sheep ranchers; (*b*) the weaknesses in the present system of lamb marketing; and (*c*) the adjustments necessary to improve the economic position of the industry. It was believed that such a survey would provide basic information necessary to a solution of many of the sheep ranchers' problems, and that it would, in addition, indicate whether further experimental work should be undertaken, and if so, the form such activity should take.

The information was obtained by the survey method. Records were taken for three successive years, 1929, 1930, 1931. The information included a complete inventory at the beginning and end of each year, a statement on capitalization, a record of total crop and livestock production, and the details of ranch receipts and expenses, management problems, and so forth. This report deals with the three-year average. It represents the tabulation and analysis of financial transactions and other details involved in the management and operation of 100 sheep ranches. There was a total of 465,792 sheep on these ranches, which number includes the lamb crop. They were distributed by provinces as follows: Alberta, 295,053 head; Saskatchewan, 58,465 head; and British Columbia, 112,274 head. It is believed that production factors such as the percentage of lamb crop, weight of lambs, weight of fleece, and so forth, as presented in this publication, should represent the conditions that are likely to prevail for several years. However, since prices change the tables containing the summarization of practices and other basic survey information have been prepared in sufficient detail to enable anyone to substitute current market prices in order to arrive at an accurate basis for effective planning. The income position of the industry may also be computed for any given year by budgeting.

SHEEP RANCHING REGIONS IN WESTERN CANADA

Sheep ranching is one of the principal agricultural industries of southern Alberta, southwestern Saskatchewan, and southern interior British Columbia (Figure 1). The Rocky Mountains, rising to an elevation of from six to nine thousand feet, form the boundary between the mountainous province of British Columbia and the prairie provinces of Alberta and Saskatchewan. The shaded area in Alberta and Saskatchewan is often referred to as the "short grass" or "grazing" section. It embraces approximately 24 million acres, and the lands now occupied by specialized sheep ranchers within this area amount to between two and three million acres. The major portion of the area is devoted to other forms of agriculture, notably cattle ranching and wheat farming. The farms are quite often diversified, and many have small flocks of sheep as a part of the farm economy. This study, however, deals with only the more specialized producers. The shaded area in British Columbia is commonly known as the "Southern Interior." The topography is quite different from that of the prairies, and may be described as a high rolling plateau, with numerous valleys which contain large areas of bench and bottom land.

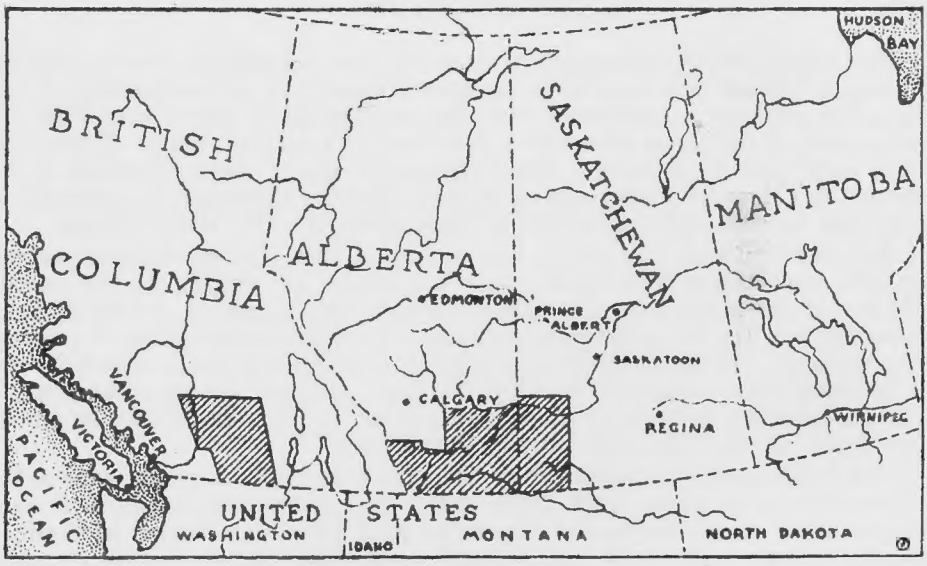

FIG. 1.—Western Canada where range sheep production is one of the principal industries.

The climate is an important factor influencing ranch organization. In the principal sheep ranching sections east of the Rocky Mountains, the average rainfall varies from 11 to 16 inches. Approximately 50 per cent of the precipitation comes during the months of May, June, and July, which is the growing season. The equivalent of about 4 inches of rain falls in the form of snow during the period from September to April. The snow seldom reaches a depth of more than 12 inches at any one time, and is often blown into drifts soon after falling. The amount of snow and the severity of the winter have a direct effect on the operation of a sheep ranch. Sufficient reserve feed must be on hand to meet emergencies. The temperature during the winter is moderated by the chinook winds, and sometimes drops as low as 40 degrees below zero, but usually for only brief periods, while during the summer the days are long and warm with an abundance of sunshine. Sheep and other live stock remain on the range throughout the winter and despite the occasional cold snap are not unduly affected by the weather, provided sufficient feed is available.

The Southern Interior part of British Columbia has a much milder climate than that of Alberta and Saskatchewan. The mountainous character of much of the interior naturally causes the climate to vary to some extent in different sections, but for the most part, the summers are not unduly warm, while in the winter the temperature seldom falls much below zero. The chief factors affecting the climate are the Japan Current, the prevailing westerly winds, and the altitude. The area lies to the east of the coast mountain range, and receives a low rainfall, the reason being that the humid air from the Pacific Ocean gives up much of its moisture as it ascends the coastal mountain slopes. Victoria and Vancouver, for example, receive from 45 to 50 inches of rainfall, while the interior receives only from 8 to 12 inches. Irrigation water is necessary in most sections for the growing of crops. The snowfall of the interior varies from 13·3 inches in the Kelowna district to 37·3 inches in the Mamette Lake district.

The native vegetation on the prairies of Alberta and Saskatchewan consists chiefly of short grasses that grow rapidly during the spring and mature during the summer. The most important of these are the grama, buffalo grass, and the wheat grasses. On the mountain slopes of Interior British Columbia the grasses are largely of the "bunch" and sage grass variety. There is also an abundance of soft, succulent weeds and browse that make excellent feed.

HISTORICAL DEVELOPMENT OF THE SHEEP RANCHING INDUSTRY

For about fifty years, sheep ranching has occupied an important position in the agricultural development of Western Canada. As shown in Table 1, there were only 346 sheep in the territories now known as Alberta and Saskatchewan in 1881. By 1891, the area now known as Alberta had 25,769 sheep, while Saskatchewan had 39,151 sheep, and the growth since that date is shown in Figure 2, for census years.

The foundation of the stock making up the ranching bands of the Prairie Provinces came largely from Montana and other sections of the United States.

TABLE 1.—SHEEP POPULATION IN CANADA BY CENSUS PERIODS, 1871-1931[1]

Year	All Canada	Ontario	Quebec	New Brunswick	Nova Scotia	Prince Edward Island	British Columbia	Manitoba	Alberta	Saskatchewan
1871	3,155,509	1,514,914	1,007,800	234,418	398,377	.....	.....	.....	.....	.....
1881	3,048,678	1,359,178	889,833	221,163	377,801	166,496	27,788	6,073	346	[2]
1891	2,563,781	1,021,769	730,286	182,941	331,492	147,372	49,163	35,838	25,769	39,151
1901	2,510,239	1,046,456	654,503	182,524	285,244	125,546	33,350	29,464	87,104	66,048
1906	.....	.....	.....	.....	.....	.....	.....	28,975	154,266	121,290
1911	2,174,300	742,188	637,088	158,316	221,074	91,232	39,272	37,322	133,592	114,216
1916	.....	.....	.....	.....	.....	.....	.....	76,762	294,690	124,237
1921	3,203,966	979,422	856,598	187,536	272,024	105,884	62,600	112,885	431,479	195,538
1926	.....	.....	.....	.....	.....	.....	.....	.....	504,849	161,831
1931	3,608,340	1,035,153	731,805	143,180	195,220	75,752	144,901	213,936	789,298	279,076
1932	3,644,500	1,040,000	751,400	131,000	155,700	68,000	151,900	199,100	833,700	313,700
1933*	3,385,800	1,000,900	666,400	120,300	148,300	64,200	148,600	212,800	664,300	360,000

[1]Dominion Bureau of Statistics. *June, 1933.
[2]Figure for Alberta includes Saskatchewan.

In the period between 1885 and 1910, the southern portion of these provinces was devoted almost exclusively to range production of cattle, horses and sheep. Homesteading of the better lands became general from about 1900 to 1910. This resulted in the breaking up of many large ranches and a shift from ranching to dry land farming—a new type of agriculture involving mainly the production of wheat. The influx of settlers forced the surviving stockmen back on the rough untillable and lighter lands in the drier sections that were less suitable for cultivation. Later, when it appeared that a mistake had been made in

homesteading certain areas which have inadequate rainfall for satisfactory wheat production, many farmers moved out and ranchers returned to run sheep on these abandoned farms.

The history of sheep production in the interior part of British Columbia dates back to the discovery of gold in the Cariboo and other parts of the interior. Gold was first discovered along the Fraser River and other streams, and in about 1858 these discoveries attracted some 20,000 gold seekers from England, Australia, California and other parts.[1] At this time, Victoria was only a trading post, but along with other centres, grew rapidly to accommodate the growing population interested in the mineral development. It was not until 1886 that the Canadian Pacific Railway was completed, which linked the province of British Columbia with the other provinces of Eastern Canada. Prior to this date the food supply needed for mining development and later for railway

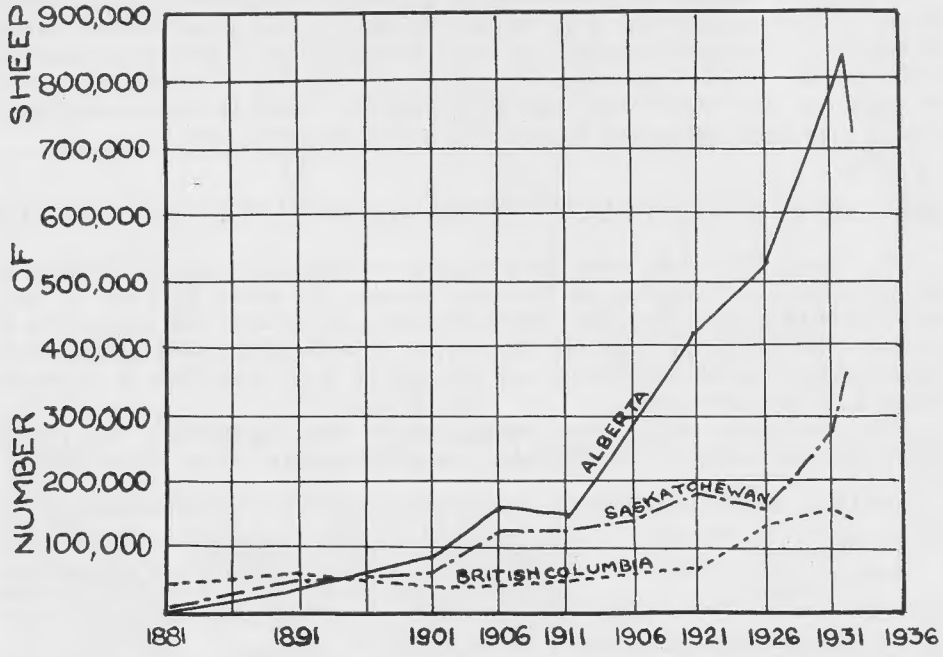

FIG. 2.—Sheep population in Alberta, Saskatchewan and British Columbia by Census Years.

construction had to be brought in at considerable cost and inconvenience. It was during the period from about 1870 to 1886 that sheep were introduced for the purpose of supplementing the diminishing natural wild meat supply.

Sheep under the care of a herder were apparently better adapted to meet the conditions of this new country than any other kind of domestic animal. The range was free, and with the exception of an occasional drought season and fire loss, the grass was abundant. Sheep were trailed in from points in western United States, and while stories are told of hardships and death losses, the rapid expansion at this time would seem to indicate that the business was undoubtedly profitable and attractive.

The official census of British Columbia Agriculture for 1881, shows a total sheep population of 27,788 head; this increased to 49,163 head by the time the 1891 census was taken. No figures are available for the intercensal years, but apparently around 1886 there was a much larger number than is indicated by the 1891 census. Early residents of the Interior who were there at the time the

[1]British Columbia Manual, 1930.

railway was completed state that its development affected the sheep business in two ways: first, by the importation of meat products made possible through shipping facilities; and second, by the closer settlement which almost immediately followed the completion of the transportation system. The number of sheep continued to decline for some years. The census of 1911 shows a slight increase over 1901; there was a marked increase from 1921 to 1932, with a slight decline in 1933.

The sheep population of the Dominion would appear to be shifting from the older settled parts of the East to the newer settled provinces of the West. The development of the sheep ranching industry has been responsible, in a large measure, for the increase in the West, while in the East the raising of sheep is more on a domestic farm flock basis.

There have been wide fluctuations in the price of sheep, as shown in Figure 3. Sheep prices are the result of lamb and wool prices, which are discussed in subsequent sections dealing with the marketing of these products. During the war years, wool reached a price of 60 cents per pound, and lamb prices likewise

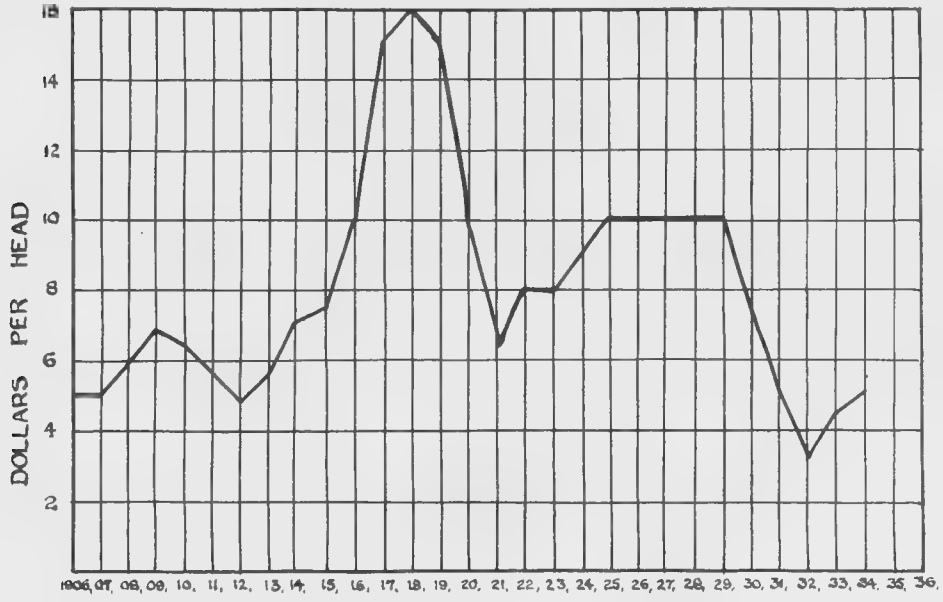

FIG. 3.—Average value per head of sheep in Canada 1906 to 1934, Canada Year Book.

followed the high price trends, which greatly stimulated production. Many ranchers purchased land, and others entered the business under inflated conditions; with the decline of prices a few were forced to liquidate, while others are still over-capitalized from obligations incurred during the war period. Another expansion movement took place from about 1925 to 1929, and the price decline which followed has caused distress to many producers of the industry.

SHEEP RANCH MANAGEMENT

The survey data presented in this publication represent a three-year average on 100 individual sheep ranches, distributed among the provinces as follows: Saskatchewan, 18; Alberta, 62; and British Columbia, 20. The number of ranches included in the final summary represents approximately 65 per cent of all the large sheep ranches in Western Canada. The term "sheep ranch," as used in this study, means specialized producers with more than 500 head of

breeding ewes, and where at least 80 per cent of the income is derived from sheep or sheep products. Included in the study there were, however, 13 records of producers who had slightly less than 500 head of breeding ewes, but these sheepmen were operating under the same conditions as were the big outfits, and were included in order to have information on income in relation to the size of business unit.

The records were combined on the basis of areas, and the number of breeding ewes. Since the breeding ewe is the productive unit, tabulation on this basis reduced all ranches to a comparable basis, while the area tabulation has been used to show the variation between provinces, as well as between areas within the province of Alberta. The figures for the ranches of British Columbia are in many sections of this publication shown separately from those of Alberta and Saskatchewan, since the mild climate, mountain grazing, and other factors cause outstanding differences in ranch management practices.

The approximate location of sheep ranches is shown in Figure 4. There are five areas, but the three areas in Alberta will be handled as one, except where it is necessary to show any significant variations. The similarity of sheep ranching conditions in Alberta and Saskatchewan has made it desirable in some instances to group the ranch records for these two provinces.

Size of Sheep Ranches

The acreage of sheep ranches and the number of sheep give a true impression of the size of ranches. However, it is more exact to think of size in relation to the number of sheep, since the acreage and carrying capacity vary greatly between ranches and between areas. In British Columbia, for example, the acreage of the ranch is small, since sheep are grazed under permit on the mountains for a considerable period of the year.

From the ranches included in the survey, 18 had over 3,500 head on the average per ranch. The average for Alberta and Saskatchewan was 1,771 head, and the average for British Columbia was 1,043 head, Table 2.

TABLE 2.—SIZE OF SHEEP RANCHES IN WESTERN CANADA, 100 SHEEP RANCHES, THREE-YEAR AVERAGE, 1929-1931

Size Group Number of Breeding Ewes	Alberta and Saskatchewan		British Columbia	
	Ranches	Sheep per Ranch	Ranches	Sheep per Ranch
	Number	Number	Number	Number
Less than 500	8	444	5	400
500 to 999	27	974	11	828
1,000 to 1,499	17	1,706	2	1,327
1,500 to 1,999	12	2,144	.....	.....
2,000 and over	16	3,569	2	3,529
Total or average	80	1,771	20	1,043

The largest ranch included in the survey had 6,842 sheep. There were, on the average, 13,308 acres per ranch in Alberta; 9,720 acres per ranch in Saskatchewan; and 3,844 acres plus mountain range controlled under permit, on the average per ranch in British Columbia. The variation was from 900 to 55,000 acres on the ranches surveyed.

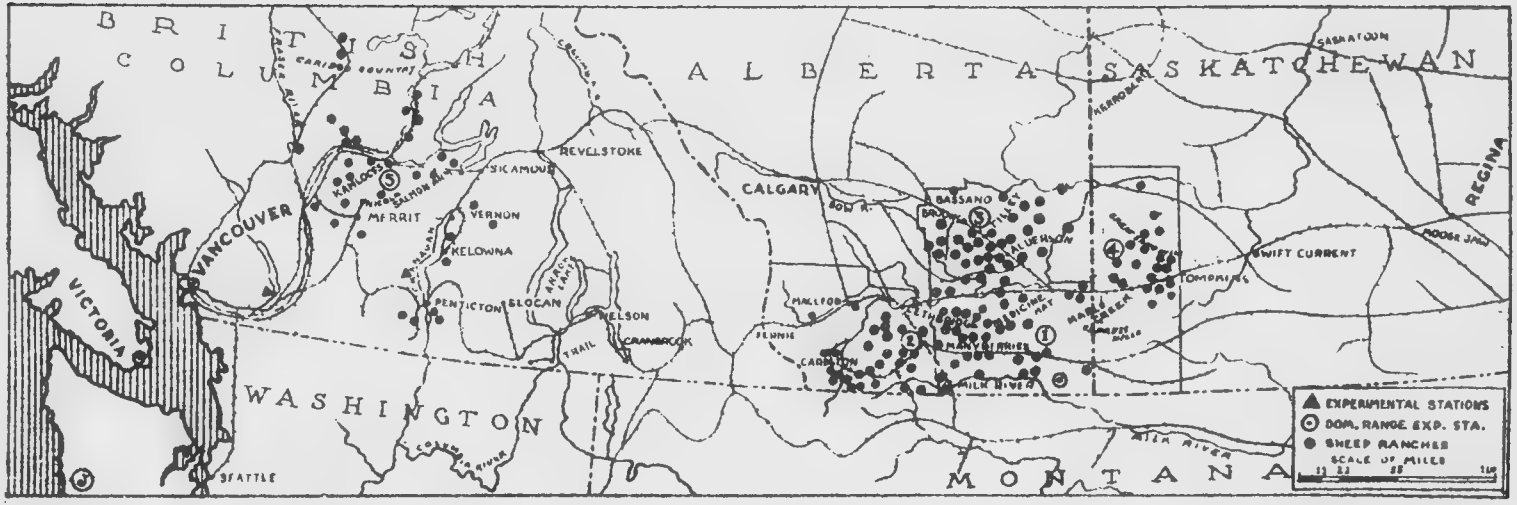

FIG. 4.—Sheep ranching areas in Western Canada.

1. Chin Coulee and Milk River area.
2. Lethbridge and Cardston Area.
3. Bow Slope and Tilley East area.
4. Maple Creek and Great Sandhills area.
5. Southern Interior British Columbia.

Size of Flock in Relation to Income

Size of flock or volume of business is an outstanding factor affecting ranch income. The income received in relation to size of flock for 80 ranches in Alberta and Saskatchewan is shown in Table 3.

TABLE 3.—SIZE OF FLOCK IN RELATION TO RANCH INCOME PER RANCH, 80 SHEEP RANCHES, ALBERTA AND SASKATCHEWAN, THREE-YEAR AVERAGE, 1929-1931

Size Group Number of Breeding Ewes	Number of Ranches	Number Breeding Ewes per Ranch	Ranch Income
Under 500	8	339	341
500- 999	27	759	971
1,000—1,499	17	1,292	1,348
1,500—1,999	12	1,691	2,725
2,000 and over	16	2,855	2,363
Total or average	80	1,389	1,530

During the period of the survey, 5·53 cents was the average price of feeder lambs, and approximately 10 cents was the average price of wool that sheepmen in Alberta and Saskatchewan received (Table 1, Appendix 3). Under these prices there was found to be an income advantage in favour of that group of ranches having between 1,500 and 2,000 breeding ewes. The fact that this number can be formed into two bands where overhead costs can be kept to a minimum, and existing labour fully utilized, together with the fact that the operator can also give personal supervision to more details than is possible on extremely large outfits, explains the success of this particular size of unit. The average of the percentage of lamb crop on the largest size group of ranches was 6·6 per cent lower than on the second largest size group of ranches, which suggests the importance of the percentage of lamb crop, which is discussed in a later section.

Small operators with under 500 breeding ewes, with no supplementary income, receive a very small return, and while some may live quite comfortably, in a self-sufficient way, the income from sheep alone does not permit a very high standard of comfort, especially where comforts can only be had as a result of outside purchases.

Combination of Sheep and Other Live Stock

The distribution of the kinds of sheep in the permanent flock is shown in Table 4. In the range areas of Western Canada sheep ranchers do not follow the

TABLE 4.—KINDS OF SHEEP IN THE PERMANENT FLOCK ON 100 SHEEP RANCHES, WESTERN CANADA, THREE-YEAR AVERAGE, 1929-1931

Kinds of Sheep	British Columbia		Alberta		Saskatchewan	
	Average 20 Ranches		Average 62 Ranches		Average 18 Ranches	
	Number	Per cent	Number	Per cent	Number	Per cent
Breeding Ewes	865	82·9	1,488	78·9	1,049	76·3
Ewe Lambs	104	10·0	342	18·1	283	20·6
Wethers and Ram Lambs	55	5·3	19	1·0	20	1·5
Rams	19	1·8	37	2·0	22	1·6
Total	1,043	100·C	1,886	100·0	1,374	100·0

practice of keeping wethers for wool production, as is the custom in certain sections of Australia and the Union of South Africa. Canadian producers find it more profitable to maintain a high percentage of breeding ewes and concentrate attention more on lamb than on wool production. The proportion of breeding ewes is higher in the range flocks of British Columbia, because of the differences in range conditions. The ewes on ranches in Alberta and Saskatchewan are generally sold off ranches at 5 or 6 years of age, except during periods when no satisfactory market exists for this class of sheep, while in British Columbia old ewes that are sound, aside from the condition of their teeth, are generally kept until they die from old age. The keeping of aged ewes does not require as many ewe lambs to be kept for replacement. Old ewes apparently do well on the soft and more succulent feed found on the mountains.

The number of horses and cattle kept on ranches was generally found to be about what was necessary for the operation of the sheep ranch. A rancher with 2,000 head of sheep might be expected to have about 10 head of cattle and 20 head of horses. A few ranchers had more, but the enterprises were small in comparison to the sheep enterprise.

Since the use of land and range practices vary greatly on the prairies as compared with British Columbia, the two will be dealt with separately in the sections that immediately follow.

Use and Control of Land in Alberta and Saskatchewan

The use of land by sheep ranchers and the problems arising therefrom are an integral part of the general land use pattern. The evolution of land use since the homestead period has shown that certain of the poorer grades might better have been left for grazing purposes, for it is these that are being organized by stockmen for ranching purposes. The organization in general is by no means complete, but the transition is evident. Some lands unsuitable for cultivation were not homesteaded, and it is these that form the major part of lease land used by sheep and cattle ranchers. In addition to lease land, some stockmen have been obliged to purchase privately owned lands to gain security and in order to have a unit large enough to be operated efficiently. The land problem has thus shifted on some ranches, where lands have been purchased, to a burdensome debt structure. The transfer of ownership has in the past been more general during high price level periods, and the prices paid for land were often far in excess of their true economic value for grazing purposes. Present users are often paying more in the way of taxes than the revenue from the use of such lands is capable of supporting.

The land use pattern of southern Alberta and southwestern Saskatchewan is a most highly complex situation, and such problems as over-grazing, insecurity, indebtedness, and in fact, many others associated with the operation of sheep ranches are related to past land settlement policies, and the resulting evolution of the use and ownership of land. One of the pre-requisite steps to the formation of a suitable land use program is a thorough type-of-farming survey, and subsequent preparation of a regionalized type-of-farming map based on all available scientific information concerning the present use of land.

On the ranches included in the survey, considerable variation was found in the valuation of deeded land. This variation was due to the importance of the land in relation to the ranch organization. A good hay meadow, or a piece of land suitable for growing domestic crops was valued from fifteen to thirty dollars per acre, while some of the poorer grazing lands were valued as low as one dollar per acre. The value of deeded land averaged $6.65 per acre in Alberta, and $9.12 per acre in Saskatchewan. The appraisal value as given by the ranchers, was what they thought such lands were worth to them as a part of their production unit.

The amount of deeded land was much higher on some ranches than on others. In Alberta, a few operated exclusively on lease land. These were located on the Blood Indian Reserve, west of Lethbridge, and on lands formerly controlled by the Canadian Pacific Railway, in the vicinity of Brooks. If these lands were not taken into consideration, it would show the deeded land on the remainder of the ranches to be about 20 per cent on the average, instead of 10·5 per cent as shown in Table 5.

TABLE 5.—ACREAGE OF OWNED AND LEASED LAND, 80 SHEEP RANCHES, WESTERN CANADA, THREE-YEAR AVERAGE. 1929-1931

Kinds of Land	Alberta	Per cent	Saskatchewan	Per cent
	Average 62 Ranches		Average 18 Ranches	
	acres		acres	
Owned Land	1,401	10·5	1,751	18·1
Leased Land	9,608	72·2	7,635	78·5
Open Free Land	2,299	17·3	334	3·4
Total	13,308	100·0	9,720	100·0

The amount of open free range has been much reduced during the past two years. When records were taken on the survey, part of the land in the Bow Slope and Tilley East Area was open free land, and the practice of "first come, first served" prevailed in the use of the range. There were several tramp ranchers with bands of sheep, who moved about from place to place where the grass was best. The lands are now mostly under the control of the province, and have been put on a lease basis.

The fact that 72·2 per cent of the land used by ranchers in Alberta was leased, and 78·5 per cent in Saskatchewan, emphasizes the importance of the tenure and kinds of lease, Table 6. Crown lands are usually leased for 21 years, the rancher being given the first chance of renewal. In Saskatchewan, 92 per cent of the leased land was leased from the crown. The cost of lease on crown lands is usually from 3 to 4 cents per acre, although it may vary according to location and quality. The ranchers in Saskatchewan had 18·1 per cent of deeded land, which shows that they have been following a policy of purchasing land to organize their ranch units.

TABLE 6.—KINDS OF LEASE LAND, 80 SHEEP RANCHES, ALBERTA AND SASKATCHEWAN, THREE-YEAR AVERAGE, 1929-1931

Kinds of Lease Land	Alberta		Saskatchewan	
	Total Acres	Per cent	Total Acres	Per cent
Crown Lease	193,738	32·5	126,480	92·0
School Lands	10,925	1·8	6,940	5·0
Hudson's Bay Lands	8,166	1·4	4,000	3·0
Indian Reserve	96,261	16·2	.....	.....
Railroad Lands[1]	150,575	25·3	.....	.....
Miscellaneous Private[2]	136,039	22·8	.....	.....
Total	595,704	100·0	137,420	100·0

[1]The Canadian Pacific Railway has recently disposed of these lands under an arrangement with the settlers and the province of Alberta.

[2]Owned by absentee landlords.

The importance of range lands to the sheep ranching business becomes apparent when it is realized that 98·3 per cent in Alberta, and 96 per cent in Saskatchewan, of the total land area of ranches, were used for grazing purposes, Table 7.

TABLE 7.—CROP AND GRAZING LANDS, 80 SHEEP RANCHES, ALBERTA AND SASKATCHEWAN, THREE-YEAR AVERAGE, 1929-1931

Use of Land	Alberta			Saskatchewan		
	Total Acres	Average per Ranch	Per cent	Total Acres	Average per Ranch	Per cent
Crop Land	14,198	229	1·7	7,026	390	4·0
Grazing Land	810,929	13,079	98·3	167,937	9,330	96·0
Total	825,127	13,308	100·0	174,963	9,720	100·0

In this study, crop land includes all land used for the production of hay and grain crops, irrespective of whether the hay crop was tame or wild hay. An estimate was received from ranchers on the acreage of wild hay cut each year, and the distribution of the crop land is shown in Table 8.

TABLE 8.—ACREAGE AND KINDS OF CROPS, 80 SHEEP RANCHES, ALBERTA AND SASKATCHEWAN, THREE-YEAR AVERAGE, 1929-1931

Kinds of Crop	Alberta			Saskatchewan		
	Total Acreage	Average per Ranch	Per cent	Total Acreage	Average per Ranch	Per cent
Hay Crops (Total)	9,429	152	66·4	5,171	287	73·6
Wild Hay	7,688	124	54·1	3,332	185	47·4
Oat Hay	936	15	6·6	1,326	74	18·9
Other Hay	805	13	5·7	513	28	7·3
Grain Crops (Total)	3,453	56	24·3	1,569	87	22·3
Wheat	2,681	43	18·9	958	53	13·6
Oats	483	8	3·4	123	7	1·8
Other Grains	289	5	2·0	488	27	6·9
Summerfallow	1,316	21	9·3	286	16	4·1
Total	14,198	229	100·0	7,026	390	100·0

Every rancher has his problem of producing enough feed to ensure a safe margin for winter requirements. Very few appear to be able to carry over much reserve hay from the previous year, especially during a series of dry years. About 70 per cent of the crop land was used for hay production. Wild hay was cut from about 50 per cent of the crop acreage. Oat hay in wet years is harvested with a binder, and stacked as bundles, but in dry years the growth generally consists of a mixture of oats and weeds, which is cut with a mowing machine, raked, and stacked in the usual way. There is no set relationship between grain crops and hay crops, for this depends upon the season. Wheat, seeded with the intention of being harvested as grain, may, in dry years be cut as feed. A field of oats may have low spots in dry years, where the crop can be cut and threshed. This might be classed as a grain crop, while the remainder of the field put up for feed would be classed as a hay crop. The other hay crops consist of barley, wheat hay, Russian thistle, or whatever happens to be growing on an area intended to grow a grain crop. The yield of hay varies from ½ to 1½ tons per acre, but in dry years the practice is to cut grass wherever the stand is thick enough to make it worth while gathering.

Some tame grasses are seeded: Alfalfa and sweet clover have been tried, but without irrigation the results in some parts have not been encouraging. Crested wheat grass has recently been introduced, and experience indicates considerable possibilities in the use of this grass.

Rate of Stocking in Alberta and Saskatchewan

One of the most serious problems of the ranching industry is depleted ranges resulting from drought and over-stocking. Over-grazing is false economy, and no one understands this fact better than the stockman, but conditions are not always under his control. There are thousands of acres in the vicinity of Suffield and Alderson that have been grazed so completely in the past by roaming bands of horses that even sheep require 15 or more acres per head. This is not the only district where over-stocking has occurred. In fact, there are many parcels of land, especially those which are unfenced in southeastern Alberta and southwestern Saskatchewan, on which the same condition exists.

On some over-stocked ranges the cactus—a non-forage plant—has increased as a result of the lack of competition from other vegetation. With an increase in the growth of desirable plants, the cactus may, through natural competition be reduced. The Canadian species is only a dwarf plant as compared with that found in parts of the United States and Australia. In the latter country, it grows to a height of from six to eight feet, and constitutes a serious menace. Efforts are being made by entomologists to bring it under control by the use of bacteria and parasitic insects. Many problems lie within the scope of range management, and the over-stocked condition of ranges in Western Canada, with the consequent increase of non-forage plants, suggests the importance of continuing scientific research along these lines, and its useful application to the problems of the rancher.[1]

The acres per sheep unit for individual ranches and areas are shown in Appendix 3. Considerable variation exists between the three areas in Alberta. The sheep ranchers used 9·2 acres per sheep unit in the Bow Slope and Tilley East Area, 6·1 acres in the Chin Coulee and Milk River Area, and 4·4 acres per sheep unit in the Lethbridge and Cardston Area. The average for 62 ranches in Alberta was 6·4 acres per sheep unit, and for 18 ranches in Saskatchewan, 6 acres per sheep unit.

Sheep unit, for purposes of this study, may be defined as one head of sheep, or the equivalent in other live stock. For purposes of bringing the number of cattle and horses to a common unit, one cow was calculated as equivalent to 5 sheep, and one horse to 7 sheep.

Size of Range Bands and Herding in Alberta and Saskatchewan

The analysis of survey information, as shown in Table 9, indicates that ranchers recognize that in order to operate economically, the number of sheep per band is an important aspect of their business. The relationship between the number of ewes and ewe lambs kept shows whether the ranchers were keeping more young stock than was needed for replacement. One may conclude that where this was done, it was with the object of increasing the size of unit and thereby obtaining greater efficiency.

[1] Valuable research work dealing with the vegetative cover of Western range lands has been undertaken by the Dominion Range Experimental Station at Manyberries, Alberta, under the leadership of L. B. Thomson and S. E. Clark.

TABLE 9.—RELATION OF EWE LAMBS KEPT TO THE NUMBER OF BREEDING EWES, 80 SHEEP RANCHES, ALBERTA AND SASKATCHEWAN, THREE-YEAR AVERAGE, 1929-1931

Size Group Number of Breeding Ewes	Ranches	Sheep per Ranch	Breeding Ewes per Ranch	Ewe Lambs per Ranch	Ewe Lambs Kept in Relation to Breeding Ewes
	Number	Number	Number	Number	Per cent
Under 500	8	444	339	90	26·5
500— 999	27	974	759	181	23·8
1,000—1,499	17	1,706	1,292	363	28·1
1,500—1,999	12	2,144	1,691	396	23·4
2,000 and over	16	3,569	2,855	611	21·4
Total or average	80	1,771	1,389	329	23·7

The number of sheep per band on the range usually varies between 1,500 and 2,000 head. The band consists of from 700 to 1,000 breeding ewes, 600 to 700 lambs, and from 200 to 300 yearling ewes. The third group, with an average of 1,292 head of breeding ewes, kept the highest percentage of ewe lambs, which clearly indicates that these ranchers have too many sheep for one band, and not enough for two.

Herding sheep on the prairies is practised in different ways, depending upon the type of range, watering developments, and the individual preference of the owner or herder. On ranges with low carrying capacity, one of the secrets of success is to allow the sheep to spread well, as is illustrated in Figure 5.

FIG. 5.—Herding sheep on the prairies.

Note the way in which the sheep are spread, which represents good herding on short grass ranges

The herding is usually done on foot, with a dog, and the better type of dogs used on the range is discussed in a later section dealing with "Dog Trials."

The sheep wagon, shown in Figure 6, is the living quarters of the herder. The bed-ground of the sheep and watering place are usually nearby. Obtaining water on the range often becomes a problem, especially during dry years. To meet this problem, flood waters from the rainy season are sometimes caught and held by means of dams built across small ravines. Some irrigation, in a small way, for growing supplementary feed, is also practised by the same method. There is ample scope for many ranchers to increase this practice, and in fact, some government assistance is now being given to encourage the building of dams. The permanency of the business and costs of construction are considerations which determine the extent of range improvements. For example, artesian wells can usually be obtained in the Milk River sandstone section of southeastern Alberta, but it is necessary to drill about 700 feet, which means a heavy cost. In the Great Sandhills Area of southwestern Saskatchewan, stockmen are more fortunate, since the water table is close to the surface, and sandpoint wells are used. The water is pumped by windmills, which are economical to run, and with occasional attention are quite dependable.

While every range differs, and practices vary accordingly, there are nevertheless three broad classifications in systems of herding. The first system in-

Fig. 6.—Sheep wagon and watering place.

volves the corralling of the sheep each night. Those who follow the second system do not corral, but use the same bed-ground each night (Figure 7). The third system differs from the other two in that the sheep have a new bed-ground each night. This latter system is not common, but those who use it claim that they can herd between three and four thousand sheep in a band. The method, in brief, is based on the principle of allowing the sheep as much individual freedom as possible, and the opportunity of following their natural instincts. During the heat of the day, they remain at the watering place, in the shade, if such is available, and wander off to graze in the cool of the evening about five o'clock. By dark they are perhaps two miles from the watering place, where they bed down for the night. The herder carries a small tent and blankets, and sleeps on the range near the flock. He leaves his tent and blankets there during the day, for the bed-ground the following night is usually only a short distance away. The sheep are up and grazing at day-break, and wander slowly back to the watering place, where they remain until the cool of the evening and then again set out to graze. If it appears, however, that a storm is coming, the sheep are corralled and the herder then sleeps at the camp wagon.

FIG. 7.—Common bed ground without corral.
Ranch located on the edge of the Cypress Hills south of Piapot, Saskatchewan.

The merits of any one of these three systems cannot be advanced as being the ideal, because what may work on one range may not be the best on another. Each system has its place. Where sheep are corralled and the corral is not moved for several months, there is much more danger from infection and parasites.

USE AND CONTROL OF LAND IN BRITISH COLUMBIA

Spring and fall range and sufficient irrigation land upon which to grow winter feed were found to be major land problems common to most British Columbia sheep ranchers.

The building of a ranch in British Columbia takes almost the work of a lifetime. It is generally necessary to clear away the timber and irrigate the land, Figure 8. This means a vast amount of work which must be spread over

FIG. 8.—Typical sheep ranch of interior British Columbia.

a period of years, especially where the work is done by the owner and his family; the clearing is usually done on owned land. A well cleared and irrigated piece of land is valued at from fifty to two hundred dollars per acre, depending upon soil, location and other factors, while the same land uncleared often sells for two dollars per acre. The owned land on the ranches surveyed amounted to 54·8 per cent, and the balance was leased (Table 10). However, these figures pertain to the ranch headquarters, and do not include mountain grazing on crown lands. A permit is issued by the provincial government for the right to graze a

TABLE 10.—ACREAGE OF OWNED AND LEASED LAND, 20 SHEEP RANCHES, SOUTHERN INTERIOR BRITISH COLUMBIA, THREE-YEAR AVERAGE, 1929-1931*

Tenure	Average Acreage	Percent
Owned Land	1,738	45·2
Leased Land	2,106	54·8
Total	3,844	100·0

*The table does not include lands pastured under permit.

certain range in the mountains, and the charge is on a per head basis. It was found to amount to approximately 6 cents per sheep for the total grazing period, which is a minimum of five months. The lambs go free, and the sheepmen usually give their mature sheep count, when making application for the permit. About one-third of the fee is often spent by the government on range improvements. These improvements consist of corrals, trails, watering places, and fencing sink-holes and other places dangerous to live stock.

The hay and grain crops on ranches in British Columbia are limited to the cleared and irrigated acreage available for cultivation. Wild hay was included as a hay crop, but the average, according to ranchers' estimates, was small. On the average only 16 per cent of the crop land was land from which wild hay was cut (Table 11). The production of hay occupies a more important position

TABLE 11.—HAY AND GRAIN CROPS, 20 SHEEP RANCHES, SOUTHERN INTERIOR BRITISH COLUMBIA, THREE-YEAR AVERAGE, 1929-1931

Item	Average per Ranch	Percent
	Acres	
Hay Crops (Total)	93	87·7
Wild Hay	16	15·1
Oat Hay	5	4·7
Other Hay	72	67·9
Grain Crops (Total)	13	12·3
Wheat	2	1·9
Oats	3	2·8
Other Grain	8	7·6
Total	106	100·0

on ranches than the growing of grain. The principal hay crop was alfalfa, although some clover and mixed grasses were grown. The alfalfa crop on irrigated land produces a heavy yield and can be cut three times in favourable years (Figure 9). The grain crops amounted to 12·3 per cent of the total crop acreage, which shows that no more grain was usually grown than was needed for ranch purposes. In fact it was found that ranchers often had to buy feed. On the average 9·6 per cent of the total ranch expense resulted from the buying of hay

and grain. In addition to the crops already mentioned, a few ranchers had one or two acres of root crops.

FIG. 9.—Alfalfa hay meadow.
The pole corral in the foreground is where the hay is stacked so that the field may be pastured as quickly as the last hay crop of the season has been removed.

MOUNTAIN GRAZING IN BRITISH COLUMBIA

The sheep are ranged on the lowlands and meadows during the fall and spring and for light snowfall periods during the winter. Near the end of June they are trailed to the high altitudes—from six to eight thousand feet—which is above the timber line on many mountains. The mountain tops are somewhat like rolling hills, with often an area of from 2 to 3 square miles projecting above the timber line. The slopes for one thousand feet or so down from the mountain tops are sparsely wooded and afford excellent grazing, Figure 10.

FIG. 10.—Summer mountain range.
Range on Apex Mountain located between Penticton and Keremeos. The altitude is about 7,000 feet. Note the sparse and stunted tree growth.

The band is under the care of the herder and usually consists of about 1,100 head of ewes and their lambs, making a total of about 2,100 head. Small flock owners generally club together in order to make up a band. The sheep are marked, and the expense for the summer is shared.

Pack horses are often used, although it is possible to reach the top by car on some mountains where roads have been built. With the pack outfit there is usually a camp tender as well as the herder. The camp tender moves the camp when necessary, and brings supplies from the nearest town. Salt is among the supplies which must be brought in by pack horses. It requires about 100 pounds per week for each band.

The sheep are taken up the mountain following the melting of the snow, and reach the peak about July 15. They are brought down gradually to lower levels as frost damages the vegetation and snow returns to the mountain tops. The return to the home ranch is usually during the last half of October.

There is usually ample summer range on the high mountains, but the problem arises in finding suitable range on the lower slopes for at least one month in the spring and about the same length of time in the fall. The burning of scrub timber to increase the amount of available range for these periods has been the subject of much discussion.

Lamb Crop on Ranches in Western Canada

In British Columbia the lambing season on about 20 per cent of the ranches starts near the end of February, or early in March. The other 80 per cent begin early in April. In Alberta and Saskatchewan, the lambing season is later, usually starting about the first of May. Those who practise early lambing in British Columbia do so with the intention of marketing early, but additional feed costs tend to offset the price advantage. Another disadvantage is that the ewes lambed on dry feed sometimes do not maintain a strong milk flow, and the lamb does not grow as rapidly as if the ewe had been lambed on green grass. Part of the hoped-for advantage of early lambing is therefore often lost by the slower growth of lambs.

The percentage of lamb crop, as calculated in this study, is based on the number of breeding ewes at the breeding season in relation to the number of lambs at marketing time. This procedure is not always followed by ranchers; in speaking of their percentage of lamb crop, some base their calculating on the tail count at docking time; but this does not allow for the death loss of lambs between docking and marketing. Others count only the wet ewes at the breeding season.

The percentage of lamb crop on the average was 92 per cent for British Columbia, 79·8 per cent for Saskatchewan, and 74·5 per cent for Alberta. There was considerable variation between areas in Alberta, as may be seen in Table 1, Appendix 3. The percentage of lamb crop in the Lethbridge and Cardston Area was 69·2 per cent; Chin Coulee and Milk River Area, 75·4 per cent; and in the Bow Slope and Tilley East Area, 79·5 per cent. The reason for the lower percentage of lamb crop in the Lethbridge and Cardston Area is due more especially to the fact that the ranches are larger than the general average, and also that this area usually has less favourable weather in some years at breeding and lambing time.

British Columbia ranchers, on the average, had a lamb crop about 15 per cent higher than the average of ranchers on the prairies (Figure 11). This is due principally to different climatic and range conditions, and in addition, to the fact that the average size of ranch was smaller.

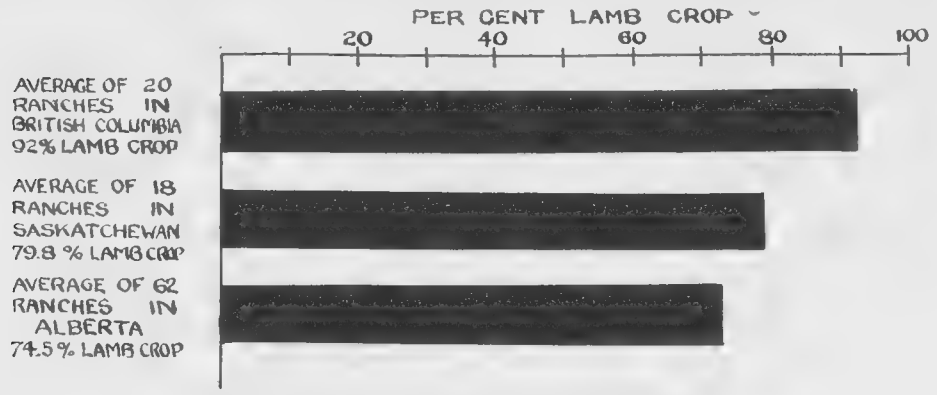
PER CENT LAMB CROP
20
40
60
80
100
AVERAGE OF 20 RANCHES IN BRITISH COLUMBIA 92% LAMB CROP
AVERAGE OF 18 RANCHES IN SASKATCHEWAN 79.8 % LAMB CROP
AVERAGE OF 62 RANCHES IN ALBERTA 74.5 % LAMB CROP

FIG. 11.—Percentage of lamb crop by provinces, 100 sheep ranches, Western Canada, three-year average 1929-1931.

The variation in the percentage of lamb crop between individual ranches may be seen in the tables of Appendix 2. The variation in Alberta and Saskatchewan for ranches grouped according to the number of breeding ewes is shown in Table 12. The ranches of the largest group had, on the average, a slightly lower percentage of lamb crop than the smaller groups.

TABLE 12.—PERCENTAGE OF LAMB CROP ACCORDING TO SIZE OF FLOCK ON 80 SHEEP RANCHES, ALBERTA AND SASKATCHEWAN, THREE-YEAR AVERAGE, 1929-1931

Size Group Number of Breeding Ewes	Number of Ranches	Average Number of Ewes	Percentage of Lamb Crop at Marketing Time	Range in Percent Lamb Crop	
				Low	High
Under 500	8	339	78·9	62·8	101·3
500— 999	27	759	79·6	53·4	94·0
1,000—1,499	17	1,292	75·6	62·6	90·6
1,500—1,999	12	1,691	78·4	68·1	89·2
2,000 and over	16	2,855	71·8	61·4	84·5
Total or average	80	1,389	75·4	.....	.....

It is more of a problem on large outfits for the owner to give the same personal attention to all management details than it is on small ranches, which often results in a lower percentage of lamp crop. The equipment available and care at lambing time are important factors causing variations between individual ranches, while weather conditions often cause variations between areas. Extreme cold and deep snow at the breeding season sometimes is the cause for a higher percentage of dry ewes, while storms and wet weather at lambing time cause a heavy death loss among lambs. The years to which the survey pertain were about the average that might be expected to prevail over a long period of time. Under drought conditions and depleted ranges, sheep ranchers on the prairies frequently kill the weaker twin lamb if it cannot be successfully placed with another ewe who has lost her own lamb. The range is too depleted for the mother to suckle two lambs and bring them through with the proper growth.

In the rancher's own words, "it is better to have one good lamb than two poor ones." Small "pee-wee" lambs at marketing time bring a very low price, and although often taken, are not wanted by feeders. The situation in British Columbia is quite different, for the summer range in the mountains enables the ewe to suckle twin lambs to good advantage, which is another factor explaining the higher percentage of lamb crop in that province. While the necessity of killing one of the twin lambs only applies on a few ranches, it deserves to be mentioned because of its relationship to the depleted conditions of ranges, where such ranchers operate, and suggests the need for range improvement as a necessary step towards successful ranch management.

The success or failure of the sheep rancher is closely related to the number of lambs saved. The importance of the percentage of lamb crop in relation to ranch income per breeding ewe is shown in Table 13. Those with the highest percentages received the most income per breeding ewe.

TABLE 13.—PERCENTAGE OF LAMB CROP IN RELATION TO RANCH INCOME, 80 SHEEP RANCHES, ALBERTA AND SASKATCHEWAN, THREE-YEAR AVERAGE, 1929-1931

Percentage of Lamb Crop	Number of Ranches	Average Percentage of Lamb Crop	Ranch Income per Breeding Ewe	Number of Breeding Ewes per Ranch
			$	
Under 70	17	65·4	0·79	1,998
70—79·9	30	75·0	1·22	1,213
80—89·9	28	83·4	1·38	1,340
90—99·9	5	91·9	1·97	656
Total or Average	80	75·4	1·10	1,389

The lambs sold in relation to lambs kept shows some of the differences in ranch management practices between provinces (Figure 12). British Columbia ranchers sell more lambs and keep less ewe lambs for replacement than the ranchers on the prairies, because old ewes are generally kept in the range bands as long as they are capable of raising a lamb, while on the prairies they are usually culled when they become five or six years of age. During high price levels for lambs it is sometimes more profitable for British Columbia ranchers to ship in breeding ewes from Alberta and Saskatchewan than to save ewe lambs from their own flocks.

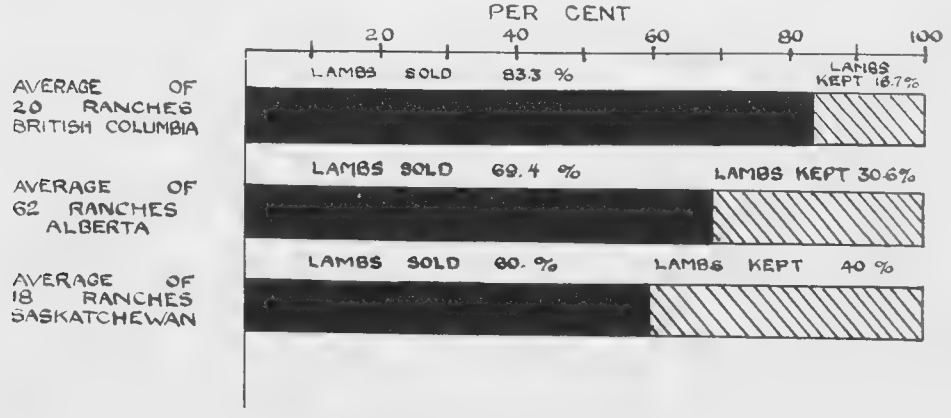

FIG. 12.—Lambs sold in relation to those kept for replacement, Western Canada, three-year average 1929-1931.

Due to early lambing and range feed in the mountains, ranchers in British Columbia are able to sell about 80 per cent of their lamb crop directly from the mountain range. The average weight of all lambs sold was 81·4 pounds. The practice was to market lambs as soon as they reached the proper weight and finish in order to have them sold at as high a price as possible and to avoid the seasonal price decline. In Alberta and Saskatchewan range lambs are sold as feeders about the middle of October and are placed in feed lots for a period of from three to four months. The lamb feeding situation will be discussed in a later section dealing with the marketing of lambs. The weight at the time of marketing for all ranches in Alberta averaged 64·9 pounds per lamb, while in Saskatchewan the average was 63·4 pounds (Figure 13). The importance of

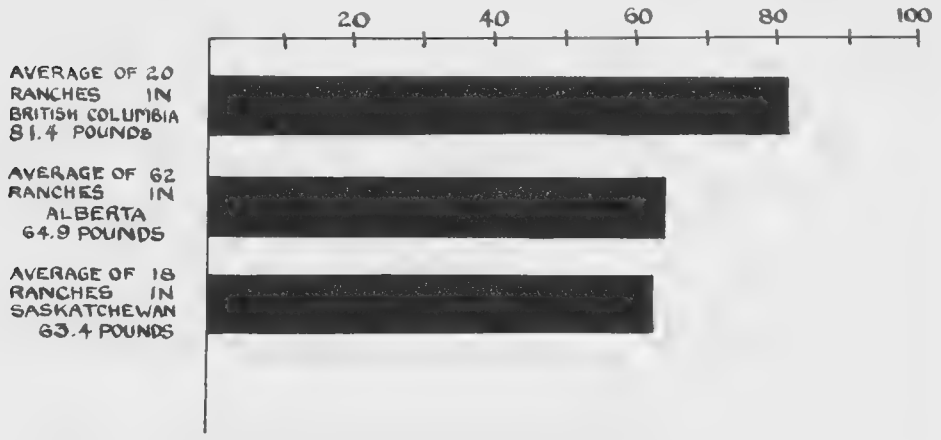

FIG. 13.—Weight of lambs sold off ranches by provinces, 100 sheep ranches, Western Canada, three-year average 1929-1931.

the weight of lamb in Alberta and Saskatchewan in relation to ranch income per breeding ewe is shown in Table 14. Those ranchers who sold the heaviest lambs received the largest income per breeding ewe, while those who sold the smallest received the least per breeding ewe. This therefore indicates the importance of weight of lambs in relation to profit.

TABLE 14.—WEIGHT OF LAMBS IN RELATION TO RANCH INCOME PER HEAD, 80 SHEEP RANCHES, ALBERTA AND SASKATCHEWAN, THREE-YEAR AVERAGE, 1929-1931

Weight of Lambs Sold	Number of Ranches	Average Weight of Lambs Sold	Ranch Income per Breeding Ewe	Average Number Breeding Ewes per Ranch
Under 60	10	58·5	0·27	1,358
60—64·9	33	62·5	0·98	1,485
65—69·9	28	67·2	1·48	1,357
70 and over	9	72·4	1·37	1,174
Total or Average	80	64·7	1·10	1,389

Breeding Practices

The breeding season on ranches in Alberta and Saskatchewan starts near the end of November and usually lasts for about one month, although the rams are often left with the ewe band until the following summer. During the summer and until the breeding season starts in the fall, they are kept in separate paddocks or placed in a "buck-herd." The "buck-herd" is sometimes made up of rams from several ranches and is placed in charge of a special herder.

In British Columbia the mating season starts in September or October, depending on the time the rancher wishes to have his lambing season begin.

The ratio of ewes to rams varies between ranches and areas. In British Columbia about 2 rams per 100 ewes is the common ratio, while in Alberta and Saskatchewan, large outfits keep about 3 rams per 100 ewes. Small ranches use fewer rams than the large outfits. The general average for all ranches on the prairies was 41 ewes per ram.

Rams are handled in various ways during the breeding season. Most ranchers make a special effort to have their rams in good condition at this time. Grain is fed for about four weeks prior to the breeding season, and after they are turned in with the ewes they are separated daily and fed grain and extra hay. The ewe band is also generally given special attention just prior to, and during, the mating season. Sometimes a little grain is fed, or the band placed on a specially reserved piece of range where the grass is more abundant. It is very desirable to have the ewes in a gaining condition, and this extra health and strength helps to carry them through the winter, as well as promoting a high percentage of fertility. The rams are sometimes placed with the ewes at night, while some ranchers alternate half of the rams every twelve hours. Very few leave the rams with the ewes continuously.

Breeds of Sheep and Flock Improvement

During the progress of the survey a classification of the breeds of rams was made on the basis of the strongest blood lines. The Rambouillet ram is the predominating type used on the range in Western Canada, Table 15. This breed of sheep has the banding instinct, herds well, and has the qualities which most nearly conform to natural requirements on the range. The ewe stock is

TABLE 15.—BREEDS OF RAMS USED, 100 SHEEP RANCHES, WESTERN CANADA, THREE-YEAR AVERAGE, 1929-1931[1]

Breed	British Columbia		Alberta		Saskatchewan	
	Number	Per cent	Number	Per cent	Number	Per cent
Rambouillet	97	25·5	1,819	78·3	281	70·6
Hampshire	62	16·3	180	7·7	48	12·1
Suffolk	80	21·1	165	7·1	9	1·2
Cheviot	51	13·4	20	0·9	28	7·0
Other Breeds[2]	90	23·7	139	6·0	32	8·1
Total	380	100·0	2,323	100·0	398	100·0

[1]Rams were classified according to the strongest blood lines.
[2]Consists of the following breeds: Lincoln, Corriedale, Leicester, Shropshire, Oxford, Romney Marsh, Ryeland, Cotswold, Harvey, etc.

also strong in Rambouillet blood, although many crosses have been made by ranchers in their breeding practices. It was found in the historical breeding record of many ranches that the fancy of the rancher, and local conditions, have influenced the various lines of breeding. One illustration will serve to show the changes made by one rancher who started in 1898 with 100 mixed

ewes and Lincoln rams. In 1900 he changed to Rambouillet rams; 1906 changed to Cheviot rams; 1910 he changed back to Rambouillet rams; 1911 used Leicester rams; 1912 changed to half Lincoln rams; 1915 changed back to Rambouillet rams; 1927 used Hampshire and Rambouillet rams. Illustrations could be multiplied to show the variety of breeding where other breeds such as Oxfords, Cotswolds, Romney Marsh, Corriedale, and others, have been used for crossing purposes. These attempts by ranchers illustrate that a breeding problem exists on sheep ranches in Western Canada. The straight breeding of Rambouillet produces a sheep after a few years that is too fine in body conformation, and lacks vigour and rustling ability, and ranchers claim that a cross is necessary. Much of the crossing has been done to obtain a more desirable market lamb. It is a common practice on many ranches to market the entire cross-bred lamb crop and keep the Rambouillet ewe lambs for replacement of the breeding stock.

A proper system of culling to dispose of barren ewes is practised on most ranches, although a few overlook this important phase of their business. This mistake is not so common where a good herder has been with the same band for three or four years, but where a new herder is on the job every year there is no way of telling a barren ewe at culling time without a system of marking.

The selection of breeding stock is often obtained from small ewe lambs unfit for market in the fall. While the system of marketing almost forces this type of procedure on ranches, still a more desirable plan, if it could be carried out, would be to make the selection from the entire breeding flock on the basis of individual performance.

The attempts by ranchers to improve their flocks signifies a conscious desire to have good breeding stock, but the results have often been disappointing, owing to mistakes of cross-breeding, culling, and the use of poor rams. Low prices during recent years have in some instances caused the use of inferior rams, because the operator lacked the money to buy better rams. The improvement of the quality of lamb and wool could be greatly enhanced by the application of scientific principles of breeding and culling. The Lethbridge Dominion Experimental Station, under the direction of W. H. Fairfield, has undertaken breeding research work both at the Station and in direct co-operation with sheep ranchers. In recent years several tests have been made with the Corriedale breed. The Animal Husbandry Division of the University of Alberta, which is in charge of J. P. Sackville, has co-operated with the Lethbridge Dominion Experimental Station on some range breeding research projects. In Saskatchewan the Animal Husbandry Division of the University of Saskatchewan has undertaken a breeding research project at the Matador ranch, as well as other projects in direct co-operation with large ranchers in southwestern Saskatchewan. This work is under the direction of A. M. Shaw.

The Joint Associate Committee on Wool of the National Research Council and the Dominion Department of Agriculture served for several years as a co-ordinating medium for sheep breeding research work in Western Canada, the National Research Council supplying financial assistance in certain cases. The work of this committee was turned over in 1936 to the National Sheep Committee appointed by the National Advisory Committee on Agricultural Services.

There are two major aspects to a breeding policy. The first has to do with selection and grading-up on ranches, and the second, to the production of better types of sheep for use on the range. The first is the short run business point-of-view of the rancher, and the second involves a long time research point-of-view. There is a definite relationship between the two, and in the end the sheep that will be produced will depend upon the ranch income.

The relationship between the income from lamb and wool is definitely related to the breeding problem. In Table 21, dealing with ranch receipts, is shown the amount of income received from these two sources. There are other sources of income such as the sale of breeding ewes, rams, and other live stock, but for purposes of emphasizing the relationship of income to breeding practices, only lamb income in relation to wool income is shown in Figure 14. The breeds of rams used by British Columbia ranchers (Table 15) shows that the producers of that province are primarily interested in a better type of market lamb. The reason for this can be readily seen when the income from lamb is 7·4 times as great as the income from wool. In Alberta and Saskatchewan approximately 1·8 times as much income is derived from lamb as from wool. Despite the fact that the income from lamb exceeds that received from wool, it does not mean that one should be emphasized to the neglect of the other, but rather improvement with respect to the two should go hand in hand. Each ranch is an experimental unit and it is believed that sheepmen would welcome the opportunity of becoming an integral part of a broad co-ordinated breeding policy. The principle of direct co-operation with ranchers started by the

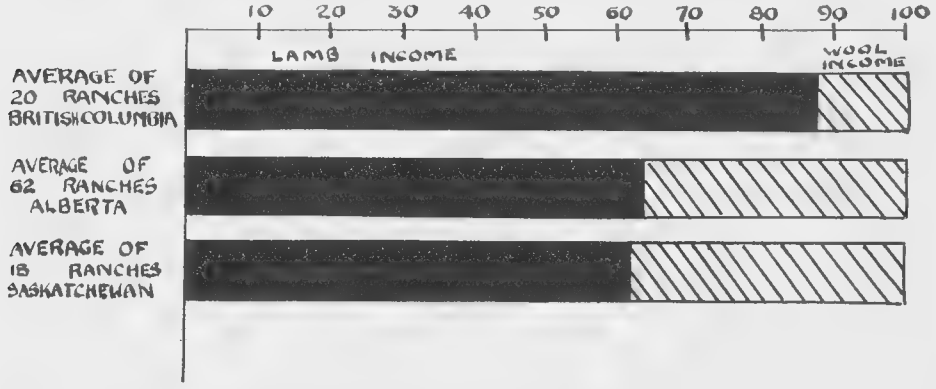

FIG. 14.—Lamb income in relation to wool income, 100 Sheep Ranches, Western Canada, three-year average, 1929-1931.

Experimental Farms Branch and other agencies might well be extended. The co-ordination of the work is also extremely important, since some of the research must be conducted under controlled conditions.

Breeding for quality suggests a very desirable use of lamb feeding results. Many lambs are fed under a contract arrangement between ranchers and farmers. The rancher is always interested in the progress of his lambs in the feed lot, and likewise the feeder is interested in comparing his results as a feeder with those of others. Making available lamb feeding results to both the rancher and the feeder would point out the weaknesses to the ranchers in their breeding and management practices as well as tend to increase the efficiency of feeders. This arrangement would be somewhat similar to the testing stations used for hogs in Denmark and Holland, which are conducted with the view of improving quality.

DEATH LOSS

The difference between the opening and closing sheep inventories, after taking into account purchases, sales, and the number used for meat on the ranch, must be considered as the death loss. It is the number missing. The inventories include the sheep in the permanent flock, and the percentage lost has been computed on this basis. It does not include the lamb losses from the time of lambing to marketing.

There was an average of 7·8 per cent death loss in British Columbia; 5·2 per cent in Alberta, and 4·9 per cent in Saskatchewan (Figure 15). The 2·6 per cent heavier death loss in British Columbia in comparison to the other provinces is due largely to more predatory animals and to a higher percentage of old ewes kept in the flocks. It is economical to keep an old ewe under range conditions in British Columbia, while the reverse is true under conditions in Alberta and Saskatchewan, provided a satisfactory market is available. The heaviest death loss generally occurs among ewes over four years of age, for in

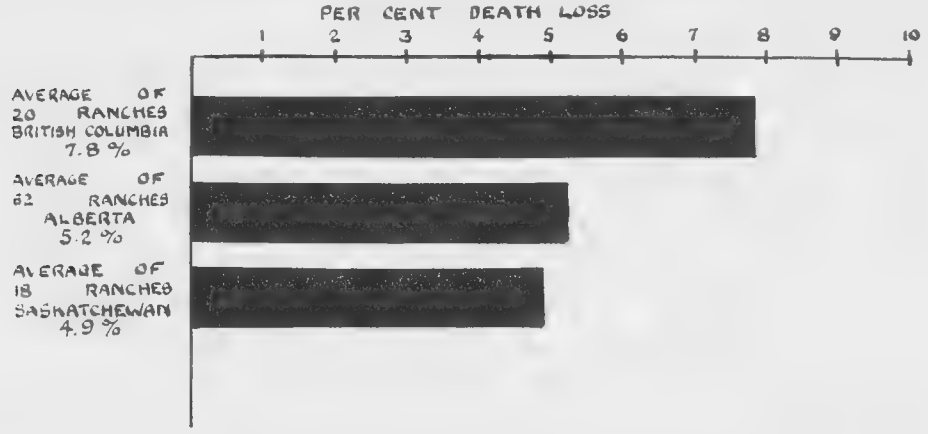

Fig. 15.—Per cent death loss in the permanent flock, 100 Sheep Ranches, Western Canada, three-year average, 1929-1931.

addition to other causes, they are more susceptible to the disease commonly known as "heaving." Other names for heaving are chronic penumonia, bronchopneumonia, and progressive pneumonia. In South Africa it is called "Jagziehte." It is a lung disease, and quite often the sick sheep is called a "lunger." Once contracted the sheep lingers on for a few months but always dies. The characteristic symptoms are heavy, difficult breathing after exercise, together with a general emaciated and unthrifty appearance (Figure 16).

Fig. 16.—Sheep suffering from heaving.

Other sheep losses are caused from poisonous plants, bad water, dogs, coyotes, worms, maggots on backs, and bluebag. Bears are troublesome to British Columbia ranchers who range their sheep during the summer on the mountains of the Upper Okanagan and North Thompson districts. Of the total death loss from all causes, bears were responsible for 7 per cent. The Grizzly is the common species on the high ranges, and he is a bold, vicious animal. He usually attacks swiftly, smashing here and there with his powerful paws, and while he may only kill one sheep outright, others often die from scratches, broken bones, or other wounds. The coyote, on the other hand, is more of a sneaking animal and works generally about dusk or early morning. It is rather simple, by examining the dead sheep, to tell whether it has been killed by a bear or a coyote. The bear starts at the flank, while the coyote starts at the neck. The ranchers in Alberta and Saskatchewan are not troubled with bears, but have a small loss from coyotes (Table 16). Occasional losses in British

TABLE 16.—CAUSES OF DEATH LOSSES, 100 SHEEP RANCHES, WESTERN CANADA, THREE-YEAR AVERAGE, 1929-1931

Causes	Alberta		Saskatchewan		British Columbia	
	Total Number	Per cent	Total Number	Per cent	Total Number	Per cent
Heaving	1,764	29·0	461	37·9	324	19·9
Poisonous Plants	502	8·3	165	13·6	371	22·8
Coyotes	157	2·5	40	3·3	163	10·0
Other Causes	3,649	60·2	549	45·2	768	47·3
Total	6,072	100·0	1,215	100·0	1,626	100·0

Columbia result from the " paralysis tick." It was reported as most troublesome on spring ranges during the latter half of April and the first half of May in the North Thompson valley, although it occurs in other parts as well. The tick is quite small and usually attaches itself to the back of the neck, ears, or spine. Several may be on an animal at one time, and the degree of paralysis varies. A few sheep die, although if the ticks are removed before the animal is too far gone, the paralysis symptoms disappear and the sheep makes a rapid recovery.

FIG. 17.—Sheep dipping tank.

Dipping

Dipping is usually done soon after shearing, but where the sheep are heavily infested with ticks, it is sometimes desirable to dip again, in the fall. Sheep require less winter feed and do better if they are free from ticks during the winter. The common method of dipping to control sheep ticks and other skin diseases is illustrated in Figure 17. The sheep are driven through a long tank and are forced to swim for a short distance. After the trip through the tank, they are held in a drain-pen while the solution that drips off runs back into the tank.

Wintering Sheep

Heavy feeding and death losses reduce profits, and the problem of providing sufficient feed to avoid losses is always a worry to the rancher. The quantity of feed required varies with the kind of winter, the condition of the sheep, and the location of the ranch. The general average by provinces (Table 17) shows that British Columbia ranchers require more hay per sheep unit. There are districts in both British Columbia and the prairies where the feed required is very light, while other districts have a long feeding period.

TABLE 17.—HAY AND GRAIN FED PER SHEEP UNIT, 100 SHEEP RANCHES, WESTERN CANADA, THREE-YEAR AVERAGE, 1929-1931

Feed	Alberta	Saskatchewan	British Columbia
Hay.....pounds	101	151	240
Grain.....pounds	8	7	7

The ranchers in the lower Okanagan sometimes get through the winter without hand feeding, and the feeding period is seldom more than eight weeks. In the Upper Okanagan it lasts from 1½ to 3 months, while in the Mamette Lake and Cariboo it lasts from 3 to 5 months. A few ranchers located close to the fruit and vegetable gardening districts in British Columbia feed some unsaleable roots and windfall apples in addition to hay and grain.

In the foothills of the extreme southwestern corner of Alberta, the deep snow often causes from 3 to 5 months' hand feeding, while in the southeastern part of the province, the snowfall is light and sheep are often wintered on a small quantity of feed. It is a common practice to have a hospital flock during the winter where thin ewes or sheep not doing well are given special care and feed. It is also the usual practice to feed yearling ewes and old ewes extra feed, particularly during storms.

In the light snowfall areas of southeastern Alberta and southwestern Saskatchewan some snow-plowing is done to uncover the grass at periods during the winter when the winds have failed to drift the snow, or when a crust has been formed. This method results in the saving of hay, but on over-grazed ranges there may not be sufficient grass beneath the snow, and this is where a problem arises. The rancher must then ship in hay. The depleted range is then the cause of added expense in the purchase of high-priced feed. This situation is met on some ranches by reserving a piece of range well supplied with grass in the event of it being necessary to snow-plow during the winter, but such is not always possible on some ranches, especially where the operator has not the proper degree of permanency.

Shearing and Marketing the Wool Clip

In British Columbia, shearing starts about May 1 in the Kamloops district, and ends about May 20 in the Okanagan, while in Alberta and Saskatchewan the season is later, starting about June 1. The shearing is usually done by crews that travel from ranch to ranch.

The sheep are generally kept in a shed for a day or more prior to shearing. This is sometimes called a "sweat shed." The purpose is to increase the amount of yolk in the wool and help in the process of shearing.

The average weight of fleece for all ranches in Western Canada was 8·1 pounds. There was no significant difference between the three provinces, although wide variation occurred between individual ranches, as may be seen in tables of Appendix 2. The highest weight for the three-year average was 10·4 pounds per fleece, while the lowest average weight was 5·9 pounds per fleece. While no analysis of quality of fleece has been made in this study, the appearance of range flocks would indicate considerable variation. Both weight and quality are linked to such ranch practices as breeding, winter and summer range conditions, and the amount of sand and other foreign material in the fleece. Preparation of the fleece at shearing time, and the age of the sheep, are other important factors causing variations.

The prices received by producers during the period of the survey averaged approximately 10 cents per pound. The variation in the price received by individual ranchers may be seen in the tables of Appendix 2.

The yearly average price of wool in Canada is shown in Figure 18. There have been wide variations in prices during the past twenty years. The highest price was reached during the war period, and the lowest in 1932.

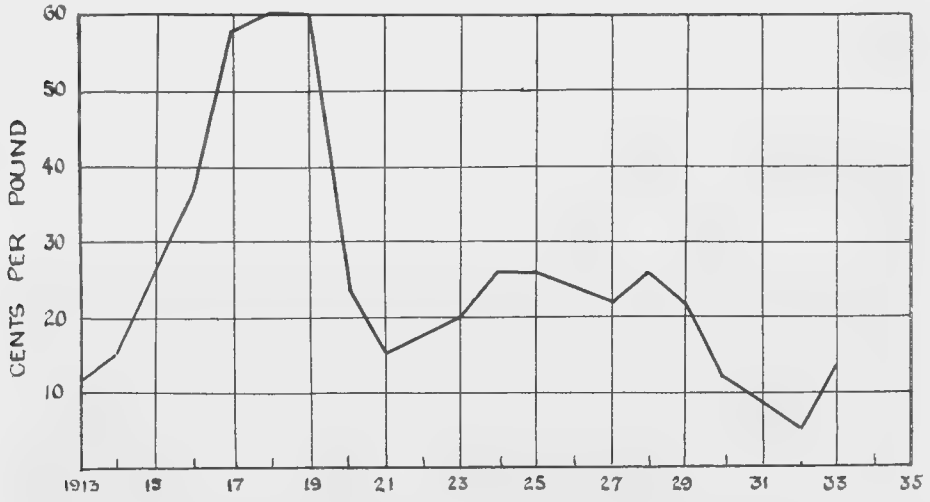

Fig. 18.—Yearly average wool prices in Canada, 1915-1935.*

About 95 per cent of all range wool was marketed during the period of the survey by the Canadian Co-operative Wool Growers' Association. This is a national producer-controlled organization, with headquarters at Toronto, Ontario. The ranchers are given a pre-shearing advance under an agreement shown in Appendix 6. At shearing time each fleece is tied separately with fleece twine, and approximately forty are contained in each large sack. The wool is not bailed as is the custom in certain parts of Australia. At the time

* Canada Year Book.

of shipment a representative of the association assists producers in making up carlot shipments, which for Alberta and Saskatchewan go directly to the association's warehouse at Weston, Ontario. The wool is there graded and sold either to eastern millers or shipped to the British market. In British Columbia grading and re-shipment takes place at Vancouver. Private buyers purchase a small amount of the wool which usually consists of a few clips on large ranches. This was the common method of sale prior to the organization of the Canadian Co-operative Wool Growers' Association. The more orderly system of marketing has enabled the sheep rancher to market his wool without the problem of having to find a buyer, and has done away with the possibility of making a bad bargain with a country buyer.

Canada's total production of wool amounts to approximately twenty million pounds, of which about 50 per cent is exported. The imports in 1934 were as follows: raw wool in the grease, 4,117,192 pounds; washed and scoured wool, 8,891,584 pounds; pulled or slipped wool, 4,200,041 pounds.[1] These figures indicate that a much larger quantity of wool is imported than is exported. The suitability of Canadian wools in the manufacture of woollen goods, and the explanation as to why more Canadian wool cannot be used by the textile industries of Canada, is information asked for by the sheep producers. This suggests the usefulness of basic research already undertaken, on the quality of Canadian wool, and the need for more information on the economic aspects of the woollen trade.

MARKETING FEEDER LAMBS IN ALBERTA AND SASKATCHEWAN

In Alberta and Saskatchewan, range lambs are sold about the 15th of October as feeders weighing about 65 pounds. They must be finished in feed lots to a weight of from 90 to 100 pounds, which requires from 90 to 130 days.

In Alberta prior to 1930, practically all lambs were sold directly to packers as feeders. However, during the past six years, a movement on the part of ranchers to finish their own lambs or contract with farmers to do so has been steadily growing. The Brooks Livestock Feeders' Association was organized in 1929, and has shown steady growth during the past seven years. In other sections of the ranching country, a few individual ranchers, by growing supplementary feed, have been able to finish their own lambs, and in some cases, purchase a few from other ranchers, while others have contracted with farmers in the Taber, Lethbridge Northern and other irrigated districts. The Dominion Live Stock Branch, for the past three years, has sponsored a yearly shipment of from 3,000 to 7,000 range feeder lambs to Ontario, where they were fed under contract with farmers. In southwestern Saskatchewan, the bulk of the lambs for several years prior to 1933, were sold at the Moose Jaw Feeder Sale. This sale is an annual event where sheep, cattle and horses are sold at public auction. In the fall of 1933, some of the sheepmen did not ship to the sale because of the belief that insufficient buying competition existed. The subject of auction sales has often been discussed among ranchers, and some have advocated their establishment in various centres in the ranching areas, but the majority opinion among producers appears at present to be against such action, mainly because of the fear of collusion among buyers. Aside from the methods of sale already mentioned approximately 50 per cent of the lambs are purchased on the range by packer buyers or other regular feeders, as shown in Figure 19.

[1] Dominion Bureau of Statistics, Trade of Canada, 1934.

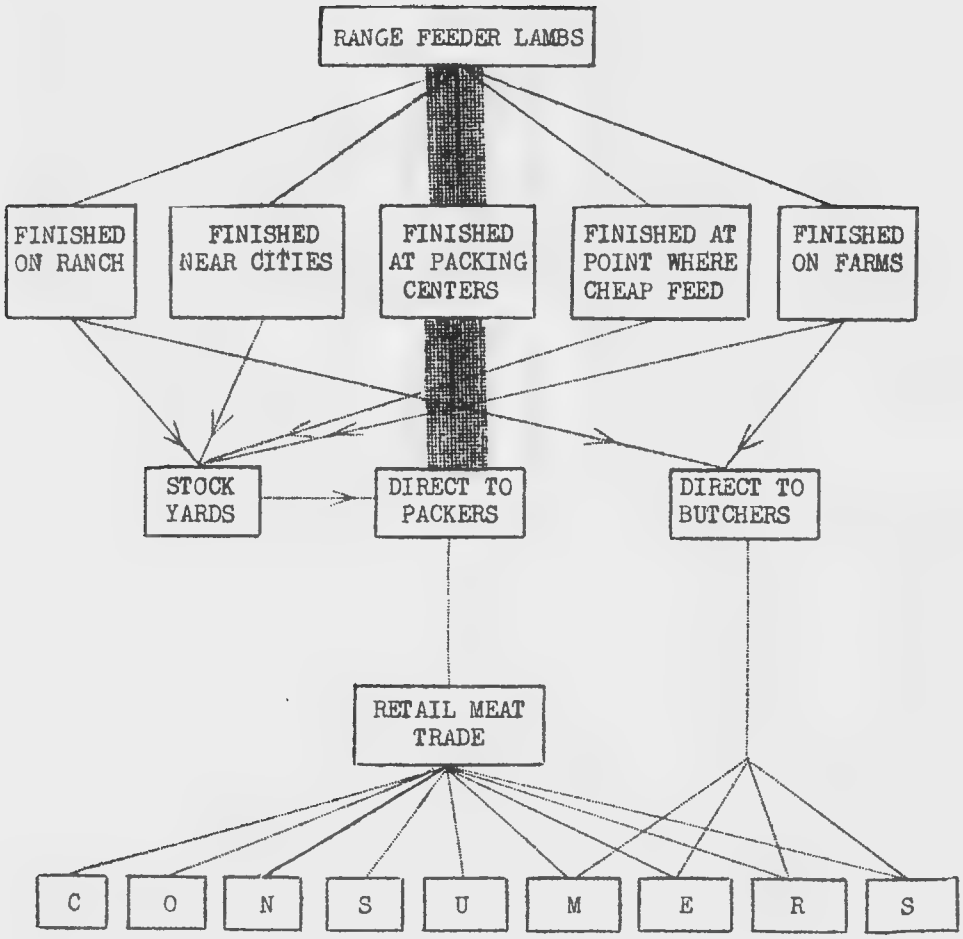

FIGURE 19.—Agencies Engaged in the Feeding of Lambs and Market Outlets for the Finished Product.

The eleven-year monthly average prices for top lambs from 1925 to 1935 on the Toronto and Calgary markets are shown in Figure 20.

The highest price period usually comes during the months of May and June, while the lowest price is during October, November, and December. It is during this latter period that the bulk of the range lambs in Alberta and Saskatchewan are marketed. The net price that ranchers receive for feeder lambs depends upon the price level, and usually varies from $\frac{1}{2}$ to $1\frac{1}{2}$ cents below the Calgary top lamb price prevailing at the time of marketing.

There are definite problems associated with the marketing of lambs. The market requires a quality product, and the rancher, as a result of the present selling system, gives attention mainly to quantity. From an analysis of survey data, the prices received by ranchers for range feeder lambs are so uniform

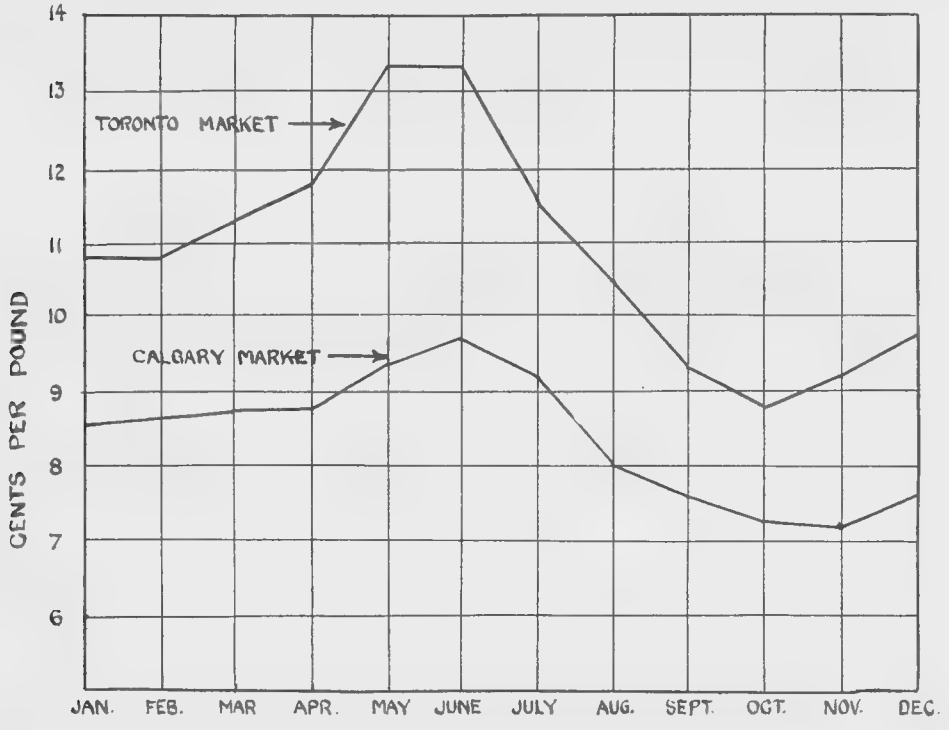

FIGURE 20.—Eleven-year Monthly Average Prices for Good Heavyweight Lambs on the Toronto and Calgary Markets, 1925 to 1935.*

that one of two things is indicated—either there is no difference in quality of lamb produced, or the trade recognizes no difference and pays a uniform price where the quality is within a reasonable degree of variation. In other words, the prices paid indicate the averaging of the quality of lots. Survey results show that any variation in prices paid to ranchers in the same area occurred at a different period in the buying season.

The present buying policy largely regards "a sheep-as-a-sheep," on the range, regardless of the efforts that some ranchers have made to breed and cull their flocks for quality. The ranchers, therefore, depend more on quantity than quality of product. They are in the business for profit and this is the only angle in their breeding practices with respect to lamb that holds out promise of additional return. It would be unreasonable to expect a policy of

*Monthly Bulletin of Agricultural Statistics, Dominion Bureau of Statistics, Agricultural Branch.

breeding for quality when such would be done at a loss. The need for better rams, systematic culling and scientific breeding with the idea of quality in mind in relation to market demand has been made clear, but in fairness to the rancher he must be told through market returns which type of lamb is most desired. A satisfactory grading system would be one that assured the consumer of the quality of product purchased, and which, at the same time, carries this purchase price back through the marketing channels in such a way that the producer was paid on the basis of quality. It is therefore suggested that every effort be made to extend the practice of purchasing of lambs on a graded basis. Those who produce the better grades should be paid accordingly. It is only by the recognition of this principle that quality will be materially improved. Standardization likewise facilitates merchandising. With respect to lamb consumption there would appear to be ample opportunity of increasing the amount of lamb consumed in Canada, since the present average consumption is only about 7 pounds per capita. The sheep ranching industry, through affiliation with other organizations that would be interested in increasing the consumption of lamb, might profit by giving greater attention to this phase of the sheep business.

The feeding of lambs by farmers in co-operation with ranchers involves the use of contracts. The division of the final returns varies. Some prefer a set price for lambs going into feed lots, with a share in the price increase; others prefer a flat price varying from 1 to 1½ cents as a guaranteed spread to the feeder. Opinions vary as to the desirability of a " set price," and some claim that a more suitable division to both rancher and feeder might be made by means of a sliding scale based on the final selling price of the finished lamb. An example of this type of contract may be seen in Appendix 5 of this publication.

The co-operative feeding arrangement between ranchers and farmers is a commendable development, and a satisfactory contract basis equitable to both is one key to its extension. It would be quite possible by the methods of correlation to work out a relationship between the price of lambs, amount of gain, and feed prices, but the problem is to make the method simple and understandable.

In Alberta a few large outfits are able to make their own lamb feeding and sale arrangements, and there has also been a small producer movement in the Brooks district, but the vast number of small and medium-sized ranchers claim that they are obliged to accept the bid of a country buyer, with no alternative. There is a feeling among this class of sheep ranchers that a more united effort with the possible establishment of feed lots, as well as more contract feeding with farmers, would improve their marketing position. Farmers have not been active in the feeding business because there are serious handicaps to the practice of one farmer feeding alone where he is not affiliated with a feeding organization. He is often unable to ship finished lambs of uniform size, and sometimes lacks terminal market information. These problems are solved when an organization handles the shipping and sale, and lambs are topped from the feed lots of farmers located in the same district. During the past, very few range lambs have been purchased directly by farmers on the range. The farmer is unfamiliar with the location of sheep ranches and is likely to spend considerable time and money locating ranchers. It is clearly evident that the practice of country buying does not lend itself to the purchase of feeder lambs by farmers who wish to feed in a small way. There is, therefore, a gap between the rancher who has the feeder lambs and the farmer who has the feed. The problem is to find a method to bridge this gap. It is therefore suggested that one approach to the problem might be to establish a voluntary organization that would buy the feeder lambs in the fall, or make a substantial advance and give the rancher a participation certificate to share in any increased returns that the finished lambs might bring. The advancing of a price to producers for their product with participation in the

final returns is a long-established principle which has been used in the marketing of wool and wheat. Such an organization might be given full control over the feeding arrangements and final sale of lambs. In the set-up of such an organization it is apparent that the interest of sheepmen would be best served, and the chances of success greatest, if the membership were confined to sheep producers and the policy of the organization developed from their point of view. The opinion prevails among sheep ranchers that a hybrid organization attempting to represent both the point of view of the rancher and that of the feeder is not the most satisfactory and permanent type of development. Likewise an organization of feeders designed to purchase lambs on the range would not meet the ranchers' marketing problem and would, in fact, tend to perpetuate the weaknesses in the present system with respect to quality.

The analysis of the sheep ranching industry has led to the conclusion that many of the problems affecting the industry are within, or are traceable to, the field of lamb marketing, some of which hold the key position to the solution of others, and are associated with terminal marketing functions and the retailing of lamb. Low price levels have tended to increase the interest of producers in the activities surrounding the marketing of their product and have led to the request for additional information.

LAMB MARKETING IN BRITISH COLUMBIA

In British Columbia range lambs are sold on the Vancouver market between June 15 and December 15, with the peak about September 15 (Figure 21). The practice of ranchers is to sell about 80 per cent of their lambs directly from

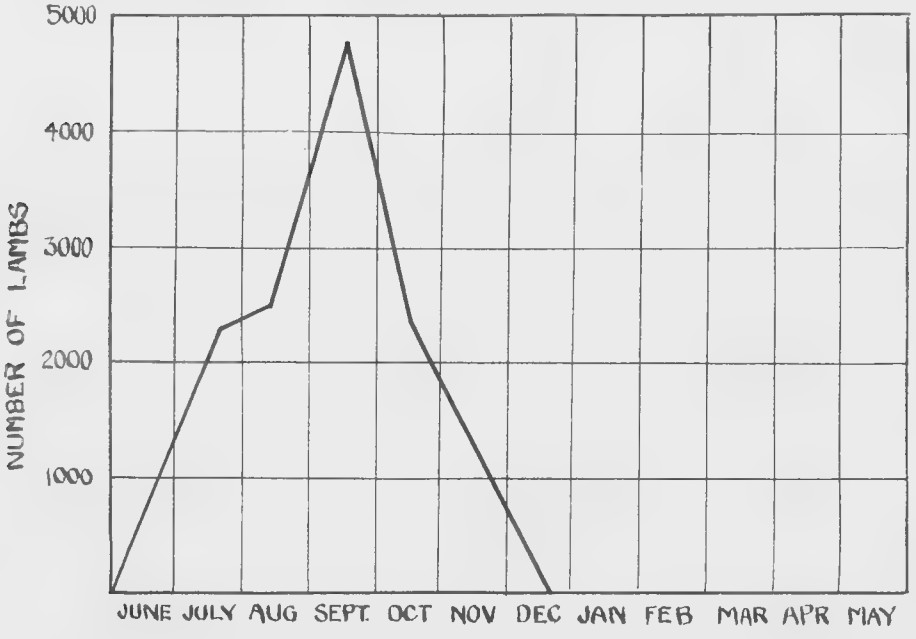

FIG. 21.—Seasonal marketing of lambs off ranches, Interior British Columbia, three-year average 1929-1931.

the mountain ranges. These lambs generally carry sufficient finish for immediate slaughter. As for the remaining 20 per cent, some are kept for replacement and expansion of the ewe band, some are finished and sold later, and some are kept until after shearing the following May, and are then marketed as year-

lings. Since ranchers of the interior sell the bulk of their lambs as finished directly from the mountain ranges, there is not the feeder-lamb problem which exists in Alberta and Saskatchewan. The price usually declines in late June, and the desire to sell before it declines often causes some producers to ship before the lambs are properly finished. It is believed that this practice on the part of a few helps to start the decline, and that it would be in the interests of all concerned if only well finished lambs were put on the market.

THE DISPOSAL OF BREEDING EWES OFF RANCHES TO FARMERS IN ALBERTA AND SASKATCHEWAN

THE AGED EWE MARKETING PROBLEM

The principal outlet for aged ewes of ranches on the prairies, prior to 1930, was to farmers in the vicinity of ranches. However, a few were shipped to British Columbia, and some went to feed lots. During the depression these outlets were closed because feeders usually refused to accept aged ewes at any price, and farmers were without funds to make their usual purchases. This class of sheep, which is normally sold off ranches at five or six years of age, had, therefore, no market outlet. The situation became generally serious, and reopening of the customary outlet to farmers who wanted to buy, but were unable to finance the transaction, became the problem to be solved. The proposition did not interest banks and other loaning agencies, because the type of loan was too small to warrant the overhead costs, in addition to the risk involved. It was realized that with such loans some supervision would be necessary. Plans were discussed among ranchers, with the view of evolving some credit plan, but again the cost of supervision and the raising of funds made the scheme seem doubtful. A means to bridge the financial gap between the rancher and farmer for a time seemed impossible, but eventually was discovered in the use of the "Commodity-Cash-Equivalent" principle.

The "Commodity-Cash-Equivalent" Principle as Developed and Used

The "Commodity-Cash-Equivalent" principle of selling sheep off ranches to farmers is carried out directly between the two parties concerned. The government supplies an official figure known as the "Western Lamb Price." This price is provided each year by the Economics Branch of the Dominion Department of Agriculture and represents the average sale price of all lambs sold between August 15 and September 30 on the Calgary and Moose Jaw live stock markets. The sheep rancher and the farmer usually get together by means of inquiry or through the usual talk and discussion of the community, and, having established contact, the rancher invites the farmer to his ranch to look at the sheep. If a deal is made, a poundage of lamb is set, which partly becomes due at the end of the first year and the remainder at the end of the second year. The official Western Lamb Price, when multiplied by these pounds when they become due, is known as the "cash-equivalent." It is this cash amount, and not the pounds of lamb, that is paid by the farmer to the rancher to clear the debt. When the cash-equivalent of all the commodity has been paid, the farmer receives clear title to the sheep. Thus the deal is made in "commodity" or "kind," and kept in such terms until the time for payment, when its value is then computed in money and the debt paid in cash—hence the term "commodity-cash equivalent."

The factors to be considered in setting the poundage of lamb are the same as if spot-cash were paid. Estimates of future prices and the age and quality of the sheep are the principal ones. Producers find it very convenient to think in

terms of commodity. Each knows from experience about what to expect in the way of lambs, wool, and death loss. In short, the commodity approach has offered a simple solution to a highly complex marketing and credit problem.

In order to illustrate a transaction, suppose a farmer purchases one hundred breeding ewes and agrees to make the commodity payment per ewe as shown in Table 18. The ten yearling ewes for instance, were each purchased for 120 pounds of lamb and the others for the amounts indicated. The next step is to multipy the poundage set by the number sold for the various ages, and divide the commodity payment between the two succeeding years. The total payment for the 100 ewes amounts to 8,000 pounds of lamb, of which 5,000 pounds comes due at the end of the first year and 3,000 pounds at the end of the second year. These commodity payments are multiplied by the official Western Lamb Price and the cash-equivalent of the lamb is paid to the rancher in settlement of the debt.

TABLE 18.—ILLUSTRATION OF COMMODITY PAYMENTS IN POUNDS OF LAMB RESULTING FROM THE SALE OF 100 BREEDING EWES

Ages of Ewes	Ewes Sold	Lamb Set per Ewe[1]	Total Lamb	Due on or before November 1[2]	
				First Year	Second Year
	No.	Pounds	Pounds	Pounds	Pounds
1's	10	120	1,200	650	550
2's	10	130	1,300	700	600
3's	10	115	1,150	650	500
4's	10	95	950	600	350
5's	20	80	1,600	1,000	600
6's	20	60	1,200	800	400
Old Ewes	20	30	600	600	.....
Total	100	.....	8,000	5,000	3,000

[1]The poundage of lamb set as shown in the above table is merely for purposes of illustration. The amount per ewe is set according to the age and quality of the sheep as well as other factors and may vary with each transaction.

[2]The end of the sheepman's year is considered to be on or before November 1st, since lambs are usually marketed by this date.

Sentiment of Sheep Ranchers and Farmers with Respect to the "Commodity-Cash-Equivalent" Principle of Doing Business

The "Commodity-Cash-Equivalent" principle for marketing sheep was worked out in 1933 with the co-operation of sheep ranchers and farmers. It was first intended for the purpose of marketing aged ewes, but it was found that farmers, in making their purchases, sometimes wished to include a few young ewes, and accordingly the contract[1] was redrafted in 1934 to allow for this. Farmer demands for breeding ewes since 1933 have been greater than the supply that the ranchers wished to offer. Undoubtedly, other things being equal, the rancher prefers a spot-cash transaction, but if cash among farmers is limited and the field is left to country buyers, and they in turn are taking advantage of the situation by bidding low, the rancher has an alternative method of sale by the commodity basis to farmers. Formerly, the rancher was forced to accept the bid of the country buyer, with no alternative, but now he has some bargaining power and has a basis for checking bids on a cash transaction. For example, if lamb prices next year are expected to be 5 cents per pound, and a five-year-old ewe can be sold to a farmer for 80 pounds of lamb, it is likely that the rancher would want $4 per head from the country buyer, although he might take

[1]A copy of the contract used may be seen in Appendix 4.

a little less since it is a spot-cash transaction. It is now possible for the sheep rancher to dispose of his aged ewes instead of allowing them to accumulate in the range bands when neighbour farmers are short of cash or during depression periods.

The "Commodity-Cash-Equivalent" principle might be set up to work in two ways. The amount of commodity may be named when the deal is made, or it may be named in the fall by some ratio or percentage of the total production. There is a vasit difference between these two methods of doing business. When a poundage of lamb is set at the beginning it makes the transaction an outright purchase and the farmer has the feeling of ownership from the start. It really becomes an extension of credit that the sheep rancher has given to the farmer and the latter receives clear title when he pays the cash-equivalent of the poundage set. The farmer, having the advantage of ownership, can plan his own business more effectively and does not necessarily need to sell lambs to meet the obligation if he has the funds available from other sources. It is also well to note that this basis of doing business keeps the transaction in terms of commodity up to the time when the cash-equivalent is paid; a change up or down in the price level does not inconvenience the farmer in paying the debt as long as he has a sufficient quantity of lamb for sale. From the sheep rancher's point of view, he prefers a clear understanding when the deal is made, with no chance of dispute at the time of final settlement. The amount of supervision is also reduced to a minimum and where a credit agency or co-operative loan society might fail because of the top-heavy cost of administration, the sheep rancher can attend to all these details, including the supervision, on a spare day or on the way to town.

The method of putting sheep out on shares for half the lamb and half the wool is one illustration of dividing the production in the fall. There is not always a satisfactory outcome to this basis of doing business. The farmer is often tempted to report his percentage of lamb crop incorrectly, or to fail to mention the number of sheep killed for family use, while the rancher, in turn, is tempted to accuse the farmer of dishonesty, if the percentage of lamb crop is low or a large number of sheep have died. Arguments inevitably develop, and neighbours dislike dealing with one another where ill-feeling and disputes are likely to arise. These objections are overcome by naming the poundage of lamb when the deal is made and following the commodity-cash-equivalent principle of payment. In years to come, this means to bridge the financial gap between sheep ranchers and farmers will most likely continue to be used since farmers, for the most part, operate on a credit basis. The extent of its use during any one year will depend upon estimates of lamb prices for the succeeding two years, and the money farmers have available to make spot-cash transactions.

Before leaving this section it might be well to mention the possible relationships of the commodity-cash-equivalent principle to other producer problems. For instance, there would appear to be no serious obstacle to using the commodity basis for selling cattle to farmers. The poundage of commodity could be set in calf, and since the actual commodity is not delivered, but rather the cash-equivalent, it would make no difference if the farmer did not sell calves as long as the cash-equivalent of the poundage was paid when it came due. An average calf-price would need to be computed each year, but this could be done by the Economics Branch as is done for the average Western Lamb Price. The commodity basis might also be used for hail insurance,[1] or "All-risk" crop insurance. The first question, if it were used for either purpose, would be to decide whether the amount of the commodity should be named at the beginning or at the end of the transaction. In other words, should a given amount of the commodity be named as a premium at the time the crop is insured, or should

[1]Two articles dealing with the payment of hail insurance premiums in kind were written by G. W. Booth, Reeve of Mount Hope Municipality in Saskatchewan—See Western Municipal News, January 1934, p. 19, and the February issue of same, 1935, p. 66.

some basis be used to determine the amount of commodity to be paid as a premium after the crop has been harvested in the fall. The transferring of the commodity into its cash-equivalent is a device which would overcome the disadvantage of handling large amounts of the actual commodity.

FINANCIAL SUMMARY OF SHEEP RANCHES

In succeeding paragraphs of this section a summary of financial returns is given. In preparing this analysis it was decided to disregard changes in inventory value of sheep other than those caused by age and numbers. Since one of the purposes of this study is to compare the operating efficiency and business practices of ranchers it is obvious that best results can be obtained by eliminating, as far as possible, changes in capitalization or loss from causes other than operations. It is recognized, of course, that the net financial position of ranchers is materially affected by changes in capital value, but the recognition of these is not essential to a comparison of current operations. A summary of capital investment, receipts, and expenses for individual ranches is contained in Appendix 2.

Capital Investment

The average capital investment for sheep ranches in the three western provinces is shown in Table 19. The highest capitalization of any one ranch was $104,841, and the lowest was $5,791. The investment in land amounted to about one-third of the total investment and the variation on individual ranches

TABLE 19.—DISTRIBUTION OF RANCH INVESTMENT, 100 SHEEP RANCHES, WESTERN CANADA, THREE-YEAR AVERAGE, 1929-1931

Item	British Columbia		Saskatchewan		Alberta	
Number of Ranches	20		18		62	
	$	%	$	%	$	%
Land	8,656	33·1	14,337	40·3	9,452	30·4
Buildings and Improvements	3,173	12·1	4,791	13·5	3,634	11·7
Sheep	8,924	34·1	9,607	27·0	13,415	43·2
Other Livestock	1,776	6·8	2,680	7·6	1,090	3·5
Machinery and Equipment	1,584	6·1	2,282	6·4	1,968	6·3
Feed	2,028	7·8	1,845	5·2	1,536	4·9
Total	26,141	100·0	35,542	100·0	31,095	100·0

may be seen in Appendix 2. The amount of owned land was the cause for wide variation. A few ranchers in Alberta operating on the Blood Indian Reserve as well as some in the Bow Slope and Tilley East Area, had all lease land, while in Saskatchewan no rancher operated exclusively on leased land, as several have followed the policy of increasing their land holdings by purchase. The investment in sheep in Alberta amounted to 43·2 per cent of the total investment, while that in the other provinces was slightly lower. Large ranches were generally found to have a higher percentage of capital in sheep than small ranches. The desire of most ranchers is to keep the investment in land low and the investment in sheep as high as possible. A fair guide to a beginner in the business would be to have at least one-third of the investment in sheep. The percentage investment in improvements was less on large ranches than on smaller ones. There is a saving in the amount of fencing where the land of the ranch is all in one block. In terms of sheep units, the average investment on ranches in British Columbia amounted to $20.48, in Alberta, $15.04, and in Saskatchewan, $20.46.

Indebtedness

The indebtedness consisted of land mortgages, bank debts, back taxes, back interest, unpaid lease rentals, store accounts, and miscellaneous accounts. The owner's equity and amount of indebtedness is shown in Table 20. A comparison of the indebtedness by provinces shows that on the average, sheep ranchers in British Columbia were much more heavily in debt than those in Alberta and Saskatchewan. They were found to be newer in the business, and since the growing of feed on irrigated land involves a high investment many started with considerable indebtedness. In Alberta the indebtedness amounted to 17·9 per cent of the total capital, or $2.69 per sheep unit. In Saskatchewan, the indebtedness amounted to 6 per cent of the total capital, or $1.22 per sheep unit. There was considerable variation between ranches. Some were clear of debt, while others were on the verge on being forced to liquidate. The causes for heavy indebtedness are due to land purchases, or mortgages placed on owned lands in order to raise money for the purchase of sheep or other ranch necessities. Some of those most heavily in debt were unfortunate in having made extensive purchases during high price levels.

TABLE 20.—RANCH INDEBTEDNESS, 100 SHEEP RANCHES, WESTERN CANADA, THREE-YEAR AVERAGE, 1929-1931

Item	British Columbia			Alberta			Saskatchewan		
	Per Ranch	Per cent	Per Sheep Unit	Per Ranch	Per cent	Per Sheep Unit	Per Ranch	Per cent	Per Sheep Unit
	$		$	$		$	$		$
Owner's Capital	19,263	73·7	15·09	25,532	82·1	12·35	33,418	94·0	19·24
Indebtedness	6,878	26·3	5·39	5,563	17·9	2·69	2,124	6·0	1·22
Total	26,141	100·0	20·48	31,095	100·0	15·04	35,542	100·0	20·46

The rate of interest on loans has been the subject of much discussion among sheep producers. The rates charged were found to depend on the source of the loan. Banks and mortgage companies generally loaned at 8 per cent, while some ranchers were able to obtain a rate of 6 per cent on the unpaid balance of private land purchases. Since the time of making the survey, it has been made illegal to charge a rate in excess of 7 per cent. The length of loan is an important aspect to the rancher, and it would be to the advantage of some who are most heavily in debt if that indebtedness could be placed on a long time basis under an amortization plan. The sheep rancher who operates under average conditions and has average managerial ability, can ordinarily meet his indebtedness if given sufficient time and if not forced to liquidate part of his sheep or otherwise adversely change his plan of operation during low price level periods.

Distribution of Expenses

The amount and distribution of ranch expense is shown in Table 21. The cash expense represents the sum that was found necessary on the average to operate, while the non-cash items represent those types of expenses which must be met in the long run, but may be deferred during short depression periods. It is this flexibility which ranchers have in their organization that enables them to continue to produce for brief periods below the cost of production. During times of depression all capital investments are usually deferred and ranchers attempt to make what they have do until the return of more favourable prices.

TABLE 21.—DISTRIBUTION OF RANCH EXPENSES, 100 SHEEP RANCHES, WESTERN CANADA, THREE-YEAR AVERAGE 1929–1931

Item	British Columbia		Saskatchewan		Alberta	
	$	%	$	%	$	%
Expenses—						
Hired labour and board	1,934	33·4	1,315	28·2	1,885	32·0
Shearing and board	148	2·6	171	3·7	220	3·8
Lease and taxes	273	4·7	566	12·1	763	13·0
Sheep purchased	893	15·4	669	14·3	666	11·3
Feed purchased	560	9·6	82	1·8	297	5·0
Salt	55	0·9	42	0·9	91	1·6
Dip, wool bags and twine	54	0·9	63	1·3	85	1·5
Car and truck	228	3·9	208	4·4	235	4·0
Repairs	91	1·6	104	2·2	132	2·2
Miscellaneous	468	8·1	379	8·1	402	6·8
Cash expense	4,704	81·1	3,599	77·0	4,776	81·2
Family labour	286	4·9	502	10·7	309	5·2
Buildings and improvements. Depreciation	67	1·2	105	2·3	72	1·2
Machinery depreciation	109	1·9	160	3·4	125	2·1
Sheep inventory decrease	370	6·4	102	2·2	404	6·9
Other live stock decrease	40	0·7	47	1·0	39	0·7
Feed inventory decrease	222	3·8	157	3·4	161	2·7
Non-cash expense	1,094	18·9	1,073	23·0	1,110	18·8
Total expense	5,798	100·0	4,672	100·0	5,886	100·0

The labour cost represents the major item of expense. During hard times there is a tendency to do with as little hired labour as possible. The peaks of the demand for labour are during the lambing and haying seasons. One of the methods of measuring the efficiency of labour is in terms of sheep units per man unit. There was considerable variation on individual ranches, and this variation may be seen in the tables of Appendix 2.

Taxes paid in Alberta and Saskatchewan were among the largest items of expense. The problem of the assessment of range lands for local tax purposes might well receive more serious consideration. Some ranchers have purchased lands that were once farmed, and in those areas debts were often incurred by the districts in keeping with a more intensive type of agriculture. Present owners of such lands are paying more in many instances than the lands are worth for range purposes. The item of lease and taxes amounted to 13 per cent of the total expenses on ranches in Alberta and 12·1 per cent on ranches in Saskatchewan. Due to the fact that sheep are grazed on the mountains under permit, the lease and taxes item on British Columbia ranches is not comparable.

During the time of the survey many ranchers were in the expanding stage and were doing considerable purchasing of rams and sometimes of ewes and ewe lambs, which accounts for the rather high expenditure for sheep purchased.

The depreciation item was computed at the rate of 10 per cent on the value of machinery and equipment, and at 4 per cent on the value of buildings and improvements.

Distribution of Receipts

The sources of receipts which are divided into cash and non-cash receipts are shown in Table 22. The revenue from lambs amounted to 60·1 per cent of the total receipts in British Columbia; to 29·9 per cent in Saskatchewan; and to 36·9 per cent in Alberta. The ranchers of British Columbia are able to sell finished lambs and are close to the Vancouver market, which explains the greater percentage return in comparison to that of producers in Alberta and Saskatchewan, who sell feeder lambs. The British Columbia ranchers sold lambs nearly twenty pounds heavier than those marketed by prairie ranchers, as may be seen in Table 1 of Appendix 3.

TABLE 22.—RANCH RECEIPTS, 100 SHEEP RANCHES, WESTERN CANADA, THREE-YEAR AVERAGE 1929-1931

Item	British Columbia		Saskatchewan		Alberta	
	$	%	$	%	$	%
Receipts—						
Lambs	4,537	60·1	1,757	29·9	2,765	36·9
Ewes	458	6·1	815	13·8	974	13·0
Wethers more than 1 year old	399	5·3	21	0·4	39	0·5
Rams	16	0·2	56	1·0	71	0·9
Other live stock	416	5·5	470	8·0	127	1·7
Crops	37	0·5	346	5·9	347	4·6
Wool	614	8·1	1,027	17·4	1,499	20·0
Miscellaneous	141	1·8	73	1·2	71	0·9
Total cash receipts	6,618	87·6	4,565	77·6	5,893	78·5
Buildings and improvements increase	31	0·4	6	0·1	56	0·7
Machinery inventory increase	7	0·1	9	0·2	8	0·1
Sheep inventory increase	667	8·8	982	16·7	1,289	17·2
Other live stock increase	103	1·4	176	3·0	76	1·0
Feed inventory increase	126	1·7	144	2·4	186	2·5
Total non-cash receipts	934	12·4	1,317	22·4	1,615	21·5
Total receipts	7,552	100·0	5,882	100·0	7,508	100·0

The comparison of ewe sales shows the percentage to be 13 on ranches in Alberta and 13·8 in Saskatchewan, because ewes are usually culled and sold off ranches when they become five or six years of age. The low figure for ewe sales in British Columbia is due to the fact that ewes are generally kept as long as they are able to raise a lamb.

The income from wool amounted to 8·1 per cent of the total receipts on ranches in British Columbia; 17·4 per cent in Saskatchewan; and 20 per cent in Alberta. The low percentage in British Columbia is due to the high returns from lambs. The relationship between the returns from lamb and wool was discussed in a previous section dealing with "Breeds of Sheep and Flock Improvement."

Income Statement

Ranch income, which is the amount remaining after deducting expenses from receipts, is shown for individual ranches in tables contained in Appendix 2. There was wide variation between ranches. The highest ranch income was $4,648, while the lowest was minus $1,283. A summary of the income statement on the basis of provinces is shown in Table 23. The interest on borrowed capital amounted to $475 on the average per ranch in British Columbia; $148 in Saskatchewan; and $400 in Alberta. The return for the operator's labour and capital is the amount remaining after deducting the interest on borrowed capital from ranch income. This amounted to $1,279 on the average per ranch in British Columbia; $1,062 in Saskatchewan, and $1,222 in Alberta.

The operator's labour was an item difficult to obtain at the time of taking records. Ranchers were hesitant in stating how much they thought their services as a manager were worth to their business. In order to overcome this difficulty, a uniform rate of 50 cents a sheep was used as a basis to calculate the wages of the operator, which amounted to $870 on the average for ranchers in British Columbia, $900 for ranchers in Saskatchewan, and $1,034 for ranchers in Alberta. Deducting interest on borrowed capital plus the operator's wage from ranch income left $409 in British Columbia, $162 in Saskatchewan, and $188 in Alberta. These amounts represent what the owner's capital earned in the way of an interest rate after meeting all other expenses. In British Columbia, 1·56 per cent was the rate of return on the owner's capital, 0·46 per cent in Saskatchewan, and 0·74 per cent in Alberta. Labour income is shown in tables

TABLE 23.—RANCH INCOME AND RATE OF RETURN ON OWNER'S CAPITAL, 100 SHEEP RANCHES, WESTERN CANADA, THREE-YEAR AVERAGE 1929-1931

Item	British Columbia	Saskatchewan	Alberta
Number of ranches	20	18	62
	$	$	$
Owner's capital	19,263	33,418	25,532
Borrowed capital	6,878	2,124	5,563
Total capital	26,141	35,542	31,095
Income—			
Cash income	6,618	4,565	5,893
Non-cash income	934	1,317	1,615
Total income	7,552	5,882	7,508
Expenses—			
Cash expense	4,704	3,599	4,776
Non-cash expense	1,094	1,073	1,110
Total expense	5,798	4,672	5,886
Ranch income	1,754	1,210	1,622
Interest on borrowed capital	475	148	400
Operator's labour	870	900	1,034
Return to owner's capital	409	162	188
Rate of return on owner's capital	1·56%	0·46%	0·74%

of Appendix 1, on an area basis. It is necessary under this method to assume an interest rate. The rate used was 6 per cent. The labour income is the amount remaining for the operator's labour after deducting an interest charge on all capital from ranch income.

ORGANIZATIONS OF SHEEP PRODUCERS

The sheep ranchers of Western Canada are usually members of the sheep association that exists in the region where they operate. These associations are made up of all types of sheep producers from the small flock farmer to the large specialized sheep rancher.

In British Columbia there is the British Columbia Sheep Breeders' Association, with headquarters at Kamloops. In addition to this provincial organization, there are several local associations which deal with local matters.

The sheep ranchers of southern Alberta are mostly members of the Southern Alberta Sheep Breeders' Association and the Southern Alberta Wool Growers' Association, both of which have headquarters at Lethbridge, Alberta. There are local sheep associations in various parts of Alberta, and those located at Calgary, Hanna, and Alderson had among their membership some of the sheep ranchers included in the survey. The Brooks Livestock Feeders' Limited, is an organization set up by the joint action of ranchers and farmers of that district to handle lamb feeding.

The sheep ranchers of Saskatchewan are practically all members of the Southwestern Saskatchewan Wool Growers' Association, with the secretary's office at Maple Creek.

The Canadian Sheep Ranchers' Association is an organization of sheep ranchers in Western Canada, with headquarters at Lethbridge, Alberta. The purpose of this organization is to give sheepmen from all districts the opportunity to get together and get acquainted as well as to reach a common understanding on such matters as the use of range lands, taxes, credit, interest rates, freight rates, sheep legislation, lamb feeding, campaigns to increase the consumption of lamb, and such endeavours, most of which are beyond the scope of community action and require a more united effort.

Some of the sheep associations handle a line of supplies for their members and most organizations are a part of, or are affiliated with, the Canadian Co-operative Wool Growers' Association.

SOME SOCIOLOGICAL ASPECTS OF SHEEP RANCH LIFE

The majority of the sheep ranchers from whom survey information was obtained had been in the sheep ranching business for many years. A few old timers were among those who were in the range country at the time of the building of the Canadian Pacific Railway, and have been interested in ranching from the very beginning. In a new country settled by people from various countries, it is natural to expect a variety of nationalities represented among those at present engaged in sheep ranching. Some came from England, Scotland, Ireland, France, Norway, Sweden, and other countries. Many were associated with sheep raising in the United States before coming to Canada. The steps through which the present ranchers have gone to reach their present position vary. For the most part, they have worked their way up in the business over a period of years, starting first without capital as a hired herder, and through years of saving have acquired a business of their own. Others followed cattle ranching, horse ranching, or wheat farming before turning to sheep.

The home of the sheep rancher may be far from large centres of amusement, but it has its attractions. Perhaps nowhere does one find a greater spirit of freedom, hospitality, and friendliness than exists among ranchers. The radio has been of great assistance in bringing the ranch home in closer contact with current affairs, and has removed much of the one-time feeling of isolation. The use of short wave receiving and sending sets has not been established among ranchers, but since very few have telephones, there would appear to be great possibilities in the future for the use of this invention. The short wave radio is now used extensively for other purposes, for example, in the lumber woods to improve communications, and it would seem that if the price were lower it could serve an equally useful purpose among stockmen in the range country.

The dwellings of sheep ranchers were found to be generally not elaborate, but comfortable and well supplied with books and magazines. Some ranchers took advantage of travelling libraries, and were therefore able to have a wide variety of reading material.

Ranchers with families encountered the problem of educating their children. It was necessary in some instances for them to arrange for their wives and children to live in town during the school terms.

In one community there was established a clubroom for the wives of ranchers and farmers. It was well supplied with books and magazines, usually donated by various people. The place was built largely through the efforts of one public-spirited lady and was maintained by funds raised from social functions. The need of a clubroom in every locality is apparent, for often when the farmer or rancher goes to town his wife accompanies him, to do the shopping. But when the tiresome job of shopping is over she is obliged to sit in the hotel lobby or in the car in the street until he has finished his business and is ready to return home. Apparently the clubroom was quite successful in this one community, which suggests the possibility of similar developments in other communities where energetic social workers are eager to do something that would be appreciated by the country folks.

SHEEP DOG TRIALS

The "sheep dog trial" which, it should be pointed out for the benefit of those likely to misinterpret the title, means a competition of sheep dogs, and has nothing to do with the legal profession, is a sport that originated in Great Britain many years ago, and has recently developed in certain range sheep areas of Western Canada. So great has been the enthusiasm of ranchers and sheep herders in the training of their dogs that the sport has become well established. There is every reason for its encouragement and expansion, since it is directly connected with an industry. It is not only interesting to watch, but it serves as an attraction to bring the members of the sheep ranching fraternity together, and has improved, and will probably continue to improve the class of sheep dogs used on the range.

The dogs originate, for the most part, from stock imported from Great Britain, and are of the Border Collie type (Figure 22).

FIG. 22.—Competitors at a sheep dog trial.

The trial is usually held in an open field in which are placed two gates and a pen. Five sheep are let out of a truck about 300 yards away from the competitor, who stands with his dog near the pen. At a signal from the judges, the shepherd directs his dog, by a whistle or a wave of the arm, to make the out-run and gather. The first test is to bring the sheep through the gates, the next is to shed, which consists of separating two sheep from the five and holding them apart. Finally the penning is done. The style of the dog and the ease and manner in which he carries out commands all count in making the awards.

There is a total of 60 points allowed by the judges; 20 points are given for gathering, of which 5 points are awarded for the out-run, 5 for lifting, and 10 for bringing; 10 points are allotted for driving; 10 for shedding; 5 for penning; 5 for style; and 10 for command. There is a time limit of 20 minutes.

Due to the rather recent development of the holding of dog trials in Canada, no system has been devised for naming a national champion. There is a possibility, however, that this might be done. One way would be to hold a national trial and offer attractive prize money. Another would be to appoint a committee and instead of holding a national competition, this committee, after attending all trials, would decide the Canadian champion. This would be a somewhat similar procedure to that by which "all star" hockey and rugby players are picked.

SUMMARY AND CONCLUSIONS

1. The percentage of lamb crop, weight of lambs, and size of business unit, were found to be factors in production closely associated with individual success in sheep ranching.

2. There are economic units that can be operated most efficiently in sheep ranching which are determined by the size of band best suited to the range.

3. That group of sheep ranchers in Alberta and Saskatchewan having between 1,500 and 2,000 breeding ewes received the largest ranch income under the prices that prevailed during the time of the survey.

4. The land use problem of southern Alberta and southwestern Saskatchewan is a highly complex one. The land occupied by sheep ranchers and the problems arising therefrom are an integral part of the general land use pattern. The findings of the survey have shown that those who have the most security on the unit which they operate, and can plan on a long-time basis, are making the most progress, other things being equal. The purchase of lands by many to organize their ranch unit has often resulted in a burdensome debt structure.

5. Such problems as over-grazing, permanency of the business, indebtedness, and in fact, many others associated with the operation of sheep ranches, are related to past land settlement policies, and the resulting evolution of the use and ownership of land. One of the steps pre-requisite to the formation of a suitable land use program is a thorough type-of-farming survey, and subsequent preparation of a regionalized type-of-farming map based on all available scientific information concerning the use of land.

6. The rate of stocking was found to be 4·4 acres per sheep unit on the average on ranches in the Lethbridge and Cardston Area; 9·2 acres per sheep unit in the Bow Slope and Tilley East Area; 6·1 acres per sheep unit in the Chin Coulee and Milk River Area. The average for 62 ranches in Alberta was 6·4 acres per sheep unit, and for 18 ranches in Saskatchewan, 6 acres per sheep unit. The over-stocked condition that exists on many ranches suggests the importance of scientific range research work, with the idea of recommending to ranchers methods by which the vegetative covering of ranges can be improved.

7. The difficulty of obtaining spring and fall range and sufficient irrigated land upon which to grow winter feed were found to be major land problems common to most British Columbia ranchers. Anything that might be done, such as seeding burned-over areas, or improvements that would make existing ranges more accessible would be helpful to British Columbia operators.

8. In Alberta and Saskatchewan the marketing of breeding ewes and especially aged ewes, has been greatly assisted by the "commodity-cash-equivalent" principle of marketing.

9. It is apparent that better rams, systematic culling and scientific breeding are needed on many ranches to improve the quality of the wool and lamb produced.

10. There are certain adjustments needed in the lamb marketing system to encourage the production of quality. While grading is recognized in the principal markets and practiced by packers, there is still the tendency of country buyers to quote a flat price to ranchers regardless of quality, where the latter is within a reasonable degree of variation. The objectives of a grading system should be to assure the consumer of the quality of product purchased, and at the same time to have this purchase price reflected back

through the marketing channels to the producer on the basis of quality. It is therefore suggested that every effort should be made to extend the practice of purchasing on a graded basis. Those who produce the better grades should be paid accordingly. It is only by the recognition of this principle that quality will be materially improved.

11. In Alberta and Saskatchewan a few large outfits are able to make their own lamb feeding and sale arrangements, and there has also been a small producer movement in the Brooks district towards this end, but the operators of small and medium sized ranches claim that because there is no alternative they are obliged to accept the bid of a country buyer. Farmers have not been active in the feeding business because there are serious weaknesses in the practice of one farmer feeding alone. Country buying likewise does not lend itself to the purchase of feeder lambs by farmers who wish to feed in a small way. There is, therefore, a gap between the rancher with the feeder lambs and the farmer with the feed. The problem is to find a method to bridge this gap. It is suggested that one approach to the problem might be to establish a voluntary organization that would buy the feeder lambs in the fall, or make a substantial advance and give the rancher a participation certificate to share in any increased returns that the finished lambs might bring. The advancing of a price to producers for their product with participation in the final returns is a long established principle which has been used in the marketing of wool and wheat. Such an organization might be given full control over the feeding arrangements and final sale of finished lambs. It would be possible under such a system to stimulate the growth of the farmer feeder movement, and by making feeding results available to both ranchers and farmers the feed lot could be made the testing grounds to help point the way to producers on their breeding practices. Such feed lots would perform a function somewhat similar to the pig testing stations in Holland and Denmark.

APPENDIX 1

SUMMARY OF RANCHES ON AN AREA BASIS

TABLE 1.—AVERAGE INVESTMENT, RANCH RECEIPTS AND EXPENSES, RANCH INCOME AND FINANCIAL SUMMARY, 62 SHEEP RANCHES, SOUTHERN ALBERTA; THREE-YEAR AVERAGE 1929–1931.

—	Average per ranch	Per cent distribution
	$	%
INVESTMENT:		
Sheep: 1,488 breeding ewes, 342 ewe lambs kept, 37 rams and 19 (ram lambs, cull lambs and wethers more than one year old). Total 1,886 sheep on the average per ranch	13,415	43·2
Land	9,452	30·4
Buildings and improvements	3,634	11·7
Other livestock	1,090	3·5
Machinery and equipment	1,968	6·3
Feed	1,536	4·9
Total	31,095	100·0
RECEIPTS:		
Lambs: 74·5% lamb crop total of 1,109 lambs, 30·6% kept and 69·4% or 770 sold. Average weight 64·96 pounds at 5·53 c. per pound or $3.59 each	2,765	36·9
Ewes	974	13·0
Wethers more than 1 year old	39	0·5
Rams	71	0·9
Other livestock	127	1·7
Crops	347	4·6
Wool: 14,671 pounds per ranch, average 8·11 pounds per fleece at 10·22c. per pound	1,499	20·0
Miscellaneous	71	0·9
Total cash receipts	5,893	78·5
Building and improvements increase	56	0·7
Machinery inventory increase	8	0·1
Sheep inventory increase	1,289	17·2
Other livestock increase	76	1·0
Feed inventory increase	186	2·5
Total non-cash receipts	1,615	21·5
Total receipts	7,508	100·0
EXPENSES:		
Hired labour and board	1,885	32·0
Shearing and board	220	3·8
Lease and taxes	763	13·0
Sheep purchased	666	11·3
Feed purchased	297	5·0
Salt	91	1·6
Dip, wool bags and twine	85	1·5
Car and truck	235	4·0
Repairs	132	2·2
Miscellaneous	402	6·8
Cash expense	4,776	81·2
Family labour	309	5·2
Buildings and improvement depreciation	72	1·2
Machinery depreciation	125	2·1
Sheep inventory decrease	404	6·9
Other livestock decrease	39	0·7
Feed inventory decrease	161	2·7
Non-cash expense	1,110	18·8
Total expense	5,886	100·0
Ranch income (receipts minus expenses)	1,622	

TABLE 1.—AVERAGE INVESTMENT, RANCH RECEIPTS AND EXPENSES, RANCH INCOME AND FINANCIAL SUMMARY, 62 SHEEP RANCHES, SOUTHERN ALBERTA; THREE-YEAR AVERAGE 1929-1931—*Concluded.*

—	Average per ranch	Per cent distribution
	$	%
METHODS OF SHOWING THE FINANCIAL POSITION:		
A. Labour income method:		
Ranch income (receipts minus expenses)	1,622	
Interest on total capital of $31,095 at 6%	1,866	
Labour income	− 243	
B. Rate of return on owner's capital:		
Ranch income (receipts minus expenses)	1,622	
Interest on $5,563 borrowed capital $ 400		
Operator's labour 50 cts. per sheep unit 1,034		
Total	1,434	
Return to ($25,532) owner's capital	188	
Rate of return on owner's capital %	0·74	

TABLE 2.—AVERAGE INVESTMENT, RANCH RECEIPTS AND EXPENSES, RANCH INCOME AND FINANCIAL SUMMARY, 20 SHEEP RANCHES, SOUTHERN INTERIOR BRITISH COLUMBIA; THREE-YEAR AVERAGE 1929-1931.

—	Average per ranch	Per cent distribution
	$	%
INVESTMENT:		
Sheep: 865 breeding ewes, 104 ewe lambs kept, 19 rams, 55 (ram lambs, cull lambs, and wethers more than one year old). Total 1,043 sheep on the average per ranch	8,924	34·1
Land	8,656	33·1
Buildings and improvements	3,173	12·1
Other livestock	1,776	6·8
Machinery and equipment	1,584	6·1
Feed	2,028	7·8
Total	26,141	100·0
RECEIPTS:		
Lambs: 92·01% lamb crop total of 807 lambs, 16·7% kept and 83·3% or 672 sold. Average weight 81·4 pounds at 8·3 cts. per pound or $6.75 each	4,537	60·1
Ewes	458	6·1
Wethers more than 1 year old	399	5·3
Rams	16	0·2
Other livestock	416	5·5
Crops	37	0·5
Wool: 7,974 pounds per ranch, average 8·11 pounds per fleece at 7·7 cts. per pound	614	8·1
Miscellaneous	141	1·8
Total cash receipts	6,618	87·6
Buildings and improvements increase	31	0·4
Machinery inventory increase	7	0·1
Sheep inventory increase	667	8·8
Other livestock increase	103	1·4
Feed inventory increase	126	1·7
Total non-cash receipts	934	12·4
Total receipts	7,552	100·0

TABLE 2.—AVERAGE INVESTMENT, RANCH RECEIPTS AND EXPENSES, RANCH INCOME AND FINANCIAL SUMMARY, 20 SHEEP RANCHES, SOUTHERN INTERIOR BRITISH COLUMBIA; THREE-YEAR AVERAGE 1929–1931.—*Concluded.*

	Average per ranch	Per cent distribution
	$	%
EXPENSES:		
Hired labour and board	1,934	33·4
Shearing and board	148	2·6
Lease and taxes	273	4·7
Sheep purchased	893	15·4
Feed purchased	560	9·6
Salt	55	0·9
Dip, wool bags and twine	54	0·9
Car and truck	228	3·9
Repairs	91	1·6
Miscellaneous	468	8·1
Cash expense	4,704	81·1
Family labour	286	4·9
Buildings and improvement depreciation	67	1·2
Machinery depreciation	109	1·9
Sheep inventory decrease	370	6·4
Other livestock decrease	40	0·7
Feed inventory decrease	222	3·8
Non-cash expense	1,094	18·9
Total expense	5,798	100·0
Ranch income (receipts minus expenses)	1,754	
METHODS OF SHOWING THE FINANCIAL POSITION:		
A. Labour income method:		
Ranch income (receipts minus expenses)	1,754	
Interest on total capital of $26,141 at 6%	1,568	
Labour income	186	
B. Rate of return on owner's capital:		
Ranch income (receipts minus expenses)	1,754	
Interest on $6,878 borrowed capital $ 475		
Operator's labour at 50 cts. per sheep unit 638		
Total	1,113	
Return to ($19,263) owner's capital	641	
Rate of return on owner's capital %	4·3	

TABLE 3.—AVERAGE INVESTMENT, RANCH RECEIPTS AND EXPENSES, RANCH INCOME AND FINANCIAL SUMMARY, 18 SHEEP RANCHES, MAPLE CREEK AND GREAT SANDHILLS AREA OF SOUTHWESTERN SASKATCHEWAN; THREE-YEAR AVERAGE 1929–1931.

	Average per ranch	Per cent distribution
	$	%
INVESTMENT:		
Sheep: 1,049 breeding ewes, 283 ewe lambs kept, 22 rams and 20 (ram lambs, cull lambs and wethers more than one year old). Total 1,374 sheep on the average per ranch	9,607	27·0
Land	14,337	40·3
Buildings and improvements	4,791	13·5
Other livestock	2,680	7·6
Machinery and equipment	2,282	6·4
Feed	1,845	5·2
Total	35,542	100·0

TABLE 3.—AVERAGE INVESTMENT, RANCH RECEIPTS AND EXPENSES, RANCH INCOME AND FINANCIAL SUMMARY, 18 SHEEP RANCHES, MAPLE CREEK AND GREAT SANDHILLS AREA OF SOUTHWESTERN SASKATCHEWAN; THREE-YEAR AVERAGE 1929–1931—*Concluded.*

	Average per ranch	Per cent distribution
	$	%
RECEIPTS:		
Lambs: 79·8% lamb crop total of 837 lambs, 40% kept and 60% or 502 sold. Average weight 63·4 pounds at 5·5 cts. per pound or $3.50 each	1,757	29·9
Ewes	815	13·8
Wethers more than 1 year old	21	0·4
Rams	56	1·0
Other livestock	470	8·0
Crops	346	5·9
Wool: 10,577 pounds per ranch, average 7·98 pounds per fleece at 9·7 cts. per pound	1,027	17·4
Miscellaneous	73	1·2
Total cash receipts	4,565	77·6
Building and improvements increase	6	0·1
Machinery inventory increase	9	0·2
Sheep inventory increase	982	16·7
Other livestock increase	176	3·0
Feed inventory increase	144	2·4
Total non-cash receipts	1,317	22·4
Total receipts	5,882	100·0
EXPENSES:		
Hired labour and board	1,315	28·2
Shearing and board	171	3·7
Lease and taxes	566	12·1
Sheep purchased	669	14·3
Feed purchased	82	1·8
Salt	42	0·9
Dip, wool bags and twine	63	1·3
Car and truck	208	4·4
Repairs	104	2·2
Miscellaneous	379	8·1
Cash expense	3,599	77·0
Family labour	502	10·7
Buildings and improvement depreciation	105	2·3
Machinery depreciation	160	3·4
Sheep inventory decrease	102	2·2
Other livestock decrease	47	1·0
Feed inventory decrease	157	3·4
Non-cash expense	1,073	23·0
Total expense	4,672	100·0
Ranch income (receipts minus expenses)	1,210	
METHODS OF SHOWING THE FINANCIAL POSITION:		
A. Labour income method:		
Ranch income (receipts minus expenses)	1,210	
Interest on total capital of $35,542 at 6%	2,132	
Labour income	— 922	
B. Rate of return on owner's capital:		
Ranch income (receipts minus expenses)	1,210	
Interest on $2,124 borrowed capital $ 148		
Operator's labour 50 cts. per sheep unit 866		
Total	1,014	
Return to ($33,418) owner's capital	196	
Rate of return on owner's capital %	0·59	

TABLE 4.—AVERAGE INVESTMENT, RANCH RECEIPTS AND EXPENSES, RANCH INCOME AND FINANCIAL SUMMARY, 21 SHEEP RANCHES, CHIN COULEE AND MILK RIVER AREA OF SOUTHERN ALBERTA; THREE-YEAR AVERAGE 1929–1931.

—	Average per ranch	Per cent distribution
	$	%
INVESTMENT:		
Sheep: 1,603 breeding ewes, 378 ewe lambs kept, 38 rams, 15 (ram lambs, cull lambs and wethers more than one year old). Total 2,034 sheep on the average per ranch	14,316	41·9
Land	11,635	34·0
Building and improvements	4,208	12·3
Other livestock	711	2·1
Machinery and equipment	1,759	5·1
Feed	1,556	4·6
Total	34,185	100·0
RECEIPTS:		
Lambs: 75·4% lamb crop total of 1,209 lambs, 31·3% kept and 68·7% or 831 sold. Average weight 64·3 pounds at 5·5 cts. per pound or $3.54 each	2,941	37·8
Ewes	1,442	18·5
Wethers more than 1 year old	15	0·2
Rams	101	1·3
Other livestock	42	0·5
Crops	331	4·3
Wool: 15,907 pounds per ranch, average 8·13 pounds per fleece at 10·02 cts. per pound	1,595	20·5
Miscellaneous	31	0·4
Total cash receipts	6,498	83·5
Buildings and improvements increase	65	0·8
Machinery inventory increase	2	–
Sheep inventory increase	973	12·5
Other livestock increase	29	0·4
Feed inventory increase	214	2·8
Total non-cash receipts	1,283	16·5
Total receipts	7,781	100·0
EXPENSES:		
Hired labour and board	2,167	36·7
Shearing and board	234	4·0
Lease and taxes	665	11·3
Sheep purchased	663	11·2
Feed purchased	229	3·9
Salt	95	1·6
Dip, wool bags and twine	97	1·6
Car and truck	219	3·7
Repairs	115	2·0
Miscellaneous	316	5·4
Cash expense	4,800	81·4
Family labour	310	5·3
Buildings and improvement depreciation	87	1·5
Machinery depreciation	109	1·8
Sheep inventory decrease	430	7·3
Other livestock decrease	50	0·8
Feed inventory decrease	113	1·9
Non-cash expense	1,099	18·6
Total expense	5,899	100·0
Ranch income (receipts minus expenses)	1,882	

TABLE 4.—AVERAGE INVESTMENT, RANCH RECEIPTS AND EXPENSES, RANCH INCOME AND FINANCIAL SUMMARY, 21 SHEEP RANCHES, CHIN COULEE AND MILK RIVER AREA OF SOUTHERN ALBERTA; THREE-YEAR AVERAGE 1928–1931—*Concluded.*

—	Average per ranch	Per cent distribution
	$	%
METHODS OF SHOWING THE FINANCIAL POSITION:		
A. Labour income method:		
Ranch income (receipts minus expenses)	1,882	
Interest on total capital of $34,185 at 6%	2,051	
Labour income	— 169	
B. Rate of return on owner's capital:		
Ranch income (receipts minus expenses)	1,882	
Interest on $4,239 borrowed capital $ 279		
Operator's labour at 50 cts. per sheep unit 1,078		
Total	1,357	
Return to ($29,946) owner's capital	525	
Rate of return on owner's capital %	1·75	

TABLE 5.—AVERAGE INVESTMENT, RANCH RECEIPTS AND EXPENSES, RANCH INCOME AND FINANCIAL SUMMARY, 21 SHEEP RANCHES, BOW SLOPE AND TILLEY EAST AREA OF SOUTHERN ALBERTA, THREE-YEAR AVERAGE, 1929-1931.

—	Average per ranch	Per cent distribution
	$	%
INVESTMENT:—		
Sheep: 1,265 breeding ewes, 313 ewe lambs kept, 30 rams, 22 (ram lambs, cull lambs and wethers more than one year old). Total, 1,630 sheep on the average per ranch	11,714	45·4
Land	6,502	25·2
Buildings and improvements	3,428	13·3
Other livestock	955	3·7
Machinery and equipment	1,985	7·7
Feed	1,217	4·7
Total	25,801	100·0
RECEIPTS:—		
Lambs: 79·5% lamb crop total of 1,005 lambs, 35% kept and 65% or 653 sold. Average weight 67·5 pounds at 5·53 cts. per pound or $3.73 each	2,434	34·8
Ewes	620	8·8
Wethers more than 1 year old	84	1·2
Rams	33	0·5
Other livestock	70	1·0
Crops	290	4·1
Wool: 13,753 pounds per ranch, average 8·74 pounds per fleece at 9·45 cts. per pound	1,299	18·6
Miscellaneous	85	1·2
Total cash receipts	4,915	70·2
Buildings and improvement increase	76	1·1
Machinery inventory increase	19	0·3
Sheep inventory increase	1,791	25·6
Other livestock increase	66	0·9
Feed inventory increase	135	1·9
Total non-cash receipts	2,087	29·8
Total receipts	7,002	100·0

TABLE 5.—AVERAGE INVESTMENT, RANCH RECEIPTS AND EXPENSES, RANCH INCOME AND FINANCIAL SUMMARY, 21 SHEEP RANCHES, BOW SLOPE AND TILLEY EAST AREA OF SOUTHERN ALBERTA, THREE-YEAR AVERAGE, 1929-1931. —*Concluded.*

—	Average per ranch	Per cent distribution
	$	%
EXPENSES:—		
Hired labour and board	1,524	27·4
Shearing and board	191	3·4
Lease and taxes	718	12·9
Sheep purchased	922	16·6
Feed purchased	300	5·4
Salt	84	1·5
Dip, wool bags and twine	65	1·2
Car and truck	269	4·8
Repairs	124	2·2
Miscellaneous	423	7·6
Cash expense	4,620	83·0
Family labour	355	6·4
Buildings and improvement depreciation	64	1·1
Machinery depreciation	129	2·3
Sheep inventory decrease	179	3·2
Other livestock decrease	42	0·8
Feed inventory decrease	178	3·2
Non-cash expense	947	17·0
Total expense	5,567	100·0
Ranch income (receipts minus expenses)	1,435	
METHODS OF SHOWING THE FINANCIAL POSITION:		
A. Labour income method:		
Ranch income (receipts minus expenses)	1,435	
Interest on total capital of $25,801 at 6%	1,548	
Labour income	−113	
B. Rate of return on owner's capital:		
Ranch income (receipts minus expenses)	1,435	
Interest on $3,976 borrowed capital $ 296		
Operators' labour at 50 cts. per sheep unit 903		
Total	1,199	
Return to ($21,825) owner's capital	236	
Rate of return on owner's capital %	1·08	

TABLE 6.—AVERAGE INVESTMENT, RANCH RECEIPTS AND EXPENSES, RANCH INCOME AND FINANCIAL SUMMARY, 20 SHEEP RANCHES, LETHBRIDGE AND CARDSTON AREA OF SOUTHERN ALBERTA, THREE-YEAR AVERAGE, 1929-1931.

—	Average per ranch	Per cent distribution
	$	%
INVESTMENT:		
Sheep: 1,603 breeding ewes, 336 ewe lambs kept, 45 rams, 18 (ram lambs, cull lambs and wethers more than one year old). Total 2,002 sheep on an average per ranch	14,254	42·7
Land	10,258	30·7
Buildings and improvements	3,248	9·7
Other livestock	1,630	4·9
Machinery and equipment	2,169	6·5
Feed	1,851	5·5
Total	33,410	100·0

TABLE 6.—AVERAGE INVESTMENT, RANCH RECEIPTS AND EXPENSES, RANCH INCOME AND FINANCIAL SUMMARY, 20 SHEEP RANCHES, LETHBRIDGE AND CARDSTON AREA OF SOUTHERN ALBERTA, THREE-YEAR AVERAGE, 1929-1931. —*Concluded.*

—	Average per ranch	Per cent distriflution
	$	%
RECEIPTS:		
Lambs: 69·36% lamb crop total of 1,112 lambs, 25·4% kept and 74·6% or 829 sold. Average weight 63·57 pounds at 5·56 cts. per pound or $3.53 each	2,928	37·8
Ewes	854	11·0
Wethers more than one year old	20	0·3
Rams	78	1·0
Other livestock	274	3·5
Crops	422	5·4
Wool: 14,336 pounds per ranch, average 7·53 pounds per fleece at 11·21 cts. per pound	1,608	20·7
Miscellaneous	98	1·3
Total cash receipts	6,282	81·0
Buildings and improvement increase	24	0·3
Machinery inventory increase	5	0·1
Sheep inventory increase	1,093	14·1
Other livestock increase	139	1·8
Feed inventory increase	211	2·7
Total non-cash receipts	1,472	19·0
Total receipts	7,754	100·0
EXPENSES:		
Hired labour and board	1,968	31 7
Shearing and board	235	3·8
Lease and taxes	914	14·7
Sheep purchased	402	6·5
Feed purchased	365	5·9
Salt	94	1·5
Dip, wool bags and twine	94	1·5
Car and truck	216	3·5
Repairs	157	2·5
Miscellaneous	470	7·6
Cash expense	4,915	79·2
Family labour	262	4·2
Buildings and improvement depreciation	64	1·0
Machinery depreciation	137	2·2
Sheep inventory decrease	613	9·9
Other livestock decrease	25	0·4
Feed inventory decrease	192	3·1
Non-cash expense	1,293	20·8
Total expense	6,208	100·0
Ranch income (receipts minus expenses)	1,546	
METHODS OF SHOWING THE FINANCIAL POSITION:		
A. Labour income method:		
Ranch income (receipts minus expenses)	1,546	
Interest on total capital of $33,410 at 6%	2,004	
Labour income	−458	
B. Rate of return on owner's capital:		
Ranch income (receipts minus expenses)	1,546	
Interest on $8,623 borrowed capital $ 639		
Operator's labour at 50 cts. per sheep unit 1,128		
Total	1,767	
Return to ($24,787) owner's capital	−221	
Rate of return on owner's capital	(none)	

APPENDIX 2

SUMMARY OF INDIVIDUAL RANCHES BY AREAS

TABLE 1.—CAPITAL INVESTED PER RANCH; CAPITAL AND MAN UNITS PER SHEEP UNIT, DEATH LOSS 20 SHEEP RANCHES SOUTHERN INTERIOR BRITISH COLUMBIA; THREE-YEAR AVERAGE, 1929–1931.

Ranch number	Value land	Value sheep	Value other live-stock	Value buildings and improve-ments	Value ma-chinery and equip-ment	Value feed	Total invest-ment	Capital per sheep unit	Sheep units per man unit	Per-centage death loss
	$	$	$	$	$	$	$	$		%
176	7,079	12,140	500	2,921	2,273	2,552	27,465	19·48	286	7·5
179	4,530	4,622	1,442	3,238	1,400	1.749	16,981	21·58	242	8·6
166	2,714	1,897	1,670	2,286	1,393	1,324	11,284	26·12	173	8·4
180	3,285	1,456	10	715	122	451	6,039	31·29	154	15·6
161	4,682	9,106	2,444	3,818	2,665	2,173	24,888	19·12	300	5·8
160	45,468	36,959	2,309	9,532	4,229	6,344	104,841	22·35	337	6·2
175	5,930	23,848	507	4,070	1,461	5,135	40,951	14·83	676	6·6
171	9,992	6,919	397	2,008	428	1,240	20,984	21·79	350	7·2
167	6,592	3,140	2,170	1,908	2,889	1,919	18,618	30·82	145	9·3
177	7,858	8,488	3,868	3,892	1,645	1,295	27,046	18·05	486	7·9
178	6,073	5,597	2,636	4,094	1,366	1,325	21,091	22·53	250	5·6
164	11,250	11,393	10,791	3,750	2,403	4,250	43,837	14·93	578	12·6
172	14,970	8,818	805	3,030	1,850	1,676	31,149	27·54	295	12·2
173	5,736	4,993	502	2,264	1,375	1,070	15,940	20·86	286	10·9
174	4,015	8,078	253	3,985	1,778	796	18,905	20·53	291	4·1
165	6,894	5,712	974	3,506	935	1.589	19,610	24·67	281	11·6
169	8,900	6,986	3,338	3,100	1,686	1,679	25,689	21·18	291	6·3
162	3,046	5,952	60	954	193	922	11,127	16·66	422	7·6
168	5,701	5,455	700	2,799	1,390	2,056	18,101	25·78	263	7·2
170	8,405	6,914	137	1,595	190	1,027	18,268	22·30	351	9·2
Total	173,120	178,473	35,513	63,465	31,671	40,572	522,814	—	—	—
Average	8,656	8,924	1,776	3,173	1,584	2,028	26,141	20·48	334	7·8
Per cent	33·1	34·1	6·8	12·1	6·1	7·8	100·0	—	—	

TABLE 2.—RECEIPTS PER RANCH; PERCENTAGE OF LAMB CROP; WEIGHT OF LAMBS AND FLEECE; 20 SHEEP RANCHES, INTERIOR BRITISH COLUMBIA, THREE-YEAR AVERAGE, 1929-1931.

Ranch number	Cash receipts			Non-cash receipts		Total receipts	Weight fleece	Return per pound wool	Weight lambs market-ed	Return per pound lamb	Per-centage lamb crop
	Lamb returns	Wool returns	Other cash income	Increase sheep in-ventory	Increase other in-ventories						
	$	$	$	$	$	$	pounds	cents	pounds	cents	%
176	7,375	687	48	1,163	.....	9,273	8·2	6·6	85·6	9·32	86·7
179	1,801	293	1,424	135	383	4,036	6·7	8·4	80·6	7·93	82·8
166	1,568	165	457	88	412	2,690	8·2	8·4	84·0	8·19	110·4
180	858	113	189	11	5	1,176	7·8	9·0	80·9	8·16	94·2
161	3,535	667	1,934	161	343	6,640	8·0	7·6	78·2	7·37	84·3
160	19,073	3,072	6,634	863	311	29,953	9·1	8·13	81·5	8·0	100·0
175	12,042	1,509	1,281	3,030	266	18,128	7·8	7·6	80·0	9·12	94·8
171	3,895	516	2,137	1,056	24	7,628	8·4	7·3	83·2	8·47	100·7
167	1,879	218	1,582	153	343	4,175	7·3	8·7	81·4	8·1	87·0
177	4,091	376	3,188	1,737	32	9,424	5·9	7·4	82·5	8·43	84·7
178	3,303	448	1,074	18	697	5,540	8·2	8·8	82·2	9·28	99·6
164	6,014	747	3,892	.....	1,100	11,753	8·6	6·9	81·3	8·7	89·7
172	4,933	450	272	.....	274	5,929	6·4	7·5	85·15	8·03	86·5
173	2,774	317	330	903	48	4,372	7·3	7·0	84·89	8·0	82·7
174	4,111	540	416	1,007	104	6,178	7·7	8·3	80·8	7·7	91·5
165	2,713	405	1,077	55	115	4,365	7·4	8·7	79·8	8·1	75·1
169	1,912	668	1,659	365	401	5,005	10·38	7·5	77·3	7·4	93·1
162	3,537	323	178	1,872	119	6,029	7·9	6·6	81·0	7·9	91·6
168	1,938	302	677	163	346	3,426	7·9	6·95	81·3	7·1	80·0
170	3,392	469	887	558	25	5,331	7·6	8·3	76·3	8·8	100·8
Total	90,744	12,285	29,336	13,338	5,348	151,051					
Average	4,537	614	1,467	667	+267	7,552	8·1	7·7	81·4	8·3	92·0
Per cent	60·1	8·1	19·4	8·8	+3·6	100·0	—	—	—	—	—

TABLE 3.—EXPENSES PER RANCH, 20 SHEEP RANCHES, INTERIOR BRITISH COLUMBIA, THREE-YEAR AVERAGE 1929–1931

Ranch number	Hired labour and board	Cash expense		Live-stock purchased	Other expenses	Non-cash expense			Total expense	Receipts less expenses
		Lease, taxes forest grazing fees	Feed and salt purchased			Family labour	Depre-ciation	De-crease inven-tories		
	$	$	$	$	$	$	$	$	$	$
176	3,044	143	558	1,057	662	50	271	378	6,163	3,110
179	936	123	38	657	700	613	173	273	3,513	523
166	1,087	111	108	120	915	.....	130	389	2,860	−170
180	176	41	50	18	133	.....	33	152	603	573
161	2,257	228	72	605	946	.....	217	564	4,889	1,751
160	11,218	1,076	538	3,684	3,121	853	360	1,642	22,492	7,461
175	4,011	519	4,763	2,888	1,299	207	159	410	14,256	3,872
171	1,487	232	1,335	940	912	.....	59	1,169	6,134	1,494
167	375	89	119	533	1,041	1,420	199	291	4,067	108
177	895	321	417	2,486	365	547	227	563	5,821	3,603
178	1,968	224	366	60	757	.....	216	400	3,991	1,549
164	2,699	518	113	110	1,006	750	324	1,585	7,105	4,648
172	1,762	386	113	96	529	457	177	1,018	4,538	1,391
173	618	161	244	874	589	487	153	423	3,549	823
174	2,010	188	575	1,222	980	.....	244	304	5,523	655
165	1,124	301	197	1,053	800	345	151	525	4,496	−131
169	2,498	118	173	133	437	.....	198	574	4,131	874
162	967	333	935	1,725	349	.....	18	301	4,628	1,401
168	1,267	117	524	69	293	.....	156	1,213	3,639	−213
170	1,246	234	1,059	57	427	.....	60	470	3,553	1,778
Total	41,645	5,463	12,297	18,387	16,261	5,729	3,525	12,644	115,951	35,100
Average	2,082	273	615	+919	813	286	176	632	5,798	1,754
Per cent	35·9	4·7	10·6	+15·9	14·0	4·9	3·1	10·9	100·0	—

TABLE 4.—CAPITAL INVESTED PER RANCH; CAPITAL, ACRES AND MAN UNITS PER SHEEP UNIT, DEATH LOSS; 18 SHEEP RANCHES MAPLE CREEK AND GREAT SANDHILLS AREA OF SOUTH-WESTERN SASKATCHEWAN; THREE-YEAR AVERAGE, 1929–1931.

Ranch number	Value land	Value sheep	Value other live stock	Value buildings and improve-ments	Value ma-chinery and equip-ment	Value feed	Total invest-ment	Capital per sheep unit	Acres per sheep unit	Sheep units per man unit	Per-centage death loss
	$	$	$	$	$	$	$	$	(acres)		%
55	19,377	10,158	1,154	5,623	3,323	2,577	42,212	24·53	6·5	543	5·5
5	3,039	2,374	1,090	3,361	2,045	713	12,622	25·76	5·2	210	5·1
28	21,375	6,845	2,207	7,625	4,567	2,803	45,422	37·20	3·0	225	4·7
70	11,923	10,749	547	3,077	2,676	2,095	31,067	18·00	5·2	531	3·4
85	42,498	15,087	3,166	12,502	2,875	3,529	79,657	30·34	6·4	656	4·2
7	27,307	3,976	2,228	2,693	1,451	1,287	38,942	48·14	6·0	277	6·2
30	5,435	4,136	885	5,465	1,713	1,310	18,944	25·95	4·4	302	10·2
43	24,332	8,299	599	5,668	1,242	1,047	41,187	33·30	5·4	464	5·0
88	6,552	16,095	5,468	7,448	3,462	3,024	42,049	13·92	5·4	659	4·8
77	15,174	12,428	1,952	4,826	870	2,663	37,913	18·58	5·6	437	2·9
45	3,837	2,226	1,312	3,163	2,318	1,710	14,566	10·80	5·9	438	6·6
47	9,878	7,649	953	2,122	801	689	22,092	18·82	4·1	391	4·6
65	15,889	8,298	7,688	4,111	2,807	1,202	39,995	18·64	5·4	357	6·8
79	12,986	13,034	4,483	5,014	1,613	1,206	38,336	15·44	6·2	532	6·2
76	14,993	12,667	1,301	3,007	2,412	943	35,323	19·41	7·6	642	4·6
39	9,908	6,238	1,122	4,092	2,862	1,313	25,535	24·05	3·6	250	4·9
81	4,452	15,001	11,331	3,548	1,458	3,520	39,310	11·71	6·1	650	5·8
92	9,113	17,668	759	2,887	2,590	1,567	34,584	15·99	4·7	541	2·7
Total	258,068	172,928	48,245	86,232	41,085	33,198	639,756	—	—	—	—
Average	14,337	9,607	2,680	4,791	2,282	1,844	35,541	20·46	5·6	334	4·9
Per cent	40·4	27·0	7·5	13·5	6·4	5·2	100·0	—	—	—	—

TABLE 5.—RECEIPTS PER RANCH; PERCENTAGE OF LAMB CROP; WEIGHT OF LAMBS AND FLEECE; 18 SHEEP RANCHES MAPLE CREEK AND GREAT SANDHILLS AREA OF SOUTHWESTERN SASKATCHEWAN: THREE-YEAR AVERAGE 1929-1931.

Ranch number	Cash receipts			Non-cash receipts		Total receipts	Weight fleece	Return per pound wool	Weight lambs marketed	Return per pound lamb	Percentage lamb crop
	Lamb returns	Wool returns	Other cash income	Increase sheep inventory	Increase other inventories						
	$	$	$	$	$	$	pounds	cents	pounds	cents	%
55	1,545	1,152	1,132	1,137	137	5,103	8·0	9·8	60·4	5·6	87·7
5	542	298	356	343	357	1,896	9·0	9·2	68·7	5·4	89·2
28	1,152	621	1,962	1,688	136	5,559	7·3	9·8	66·4	5·1	84·4
70	1,487	1,197	1,274	518	130	4,606	7·9	9·5	59·4	5·9	80·4
85	2,051	1,719	2,144	227	323	6,464	9·2	10·0	59·7	5·8	73·7
7	745	532	1,944	1,979	500	5,700	8·6	9·4	67·3	5·2	80·4
30	884	382	776	795	74	2,911	7·8	9·7	61·0	5·5	76·8
43	2,320	935	322	1,393	29	4,999	8·4	10·0	65·0	5·0	87·4
88	2,405	1,726	3,530	1,646	945	10,252	8·2	9·5	62·8	5·7	83·5
77	2,064	1,397	2,110	770	233	6,574	7·9	10·1	70·0	5·6	90·6
45	1,085	792	2,139	1,191	259	5,466	7·3	9·8	62·5	5·3	83·4
47	1,447	820	673	682	234	3,856	7·7	10·5	60·8	5·5	77·8
65	1,436	745	3,361	597	187	6,326	6·7	9·5	61·7	5·0	73·3
79	1,881	1,302	924	512	22	4,641	7·5	10·0	58·8	5·2	72·3
76	1,685	1,176	944	1,017	29	4,851	7·5	10·1	62·9	5·3	74·0
39	771	689	3,603	483	174	5,720	8·3	9·2	60·1	5·8	67·3
81	1,672	1,359	3,190	710	1,791	8,722	7·1	9·6	61·7	5·3	68·1
92	6,447	1,638	1,678	1,997	477	12,237	9·3	9·0	67·1	5·9	88·1
Total	31,619	18,480	32,062	17,685	6,037	105,883	—	—	—	—	—
Average	1,757	1,027	1,781	982	335	5,882	8·0	9·7	63·4	5·5	79·8
Per cent	29·9	17·4	30·3	16·7	5·7	100·0	—	—	—	—	—

TABLE 6.—EXPENSES PER RANCH, 18 SHEEP RANCHES MAPLE CREEK AND GREAT SANDHILLS AREA OF SOUTHWESTERN SASKATCHEWAN: THREE-YEAR AVERAGE, 1929-1931.

Ranch number	Hired labour and board	Cash expense		Live-stock purchased	Other cash expenses	Non-cash expense			Total expense	Receipts less expenses
		Lease and taxes	Feed and salt purchased			Family labour	Depreciation	Decrease inventories		
	$	$	$	$	$	$	$	$	$	$
55	1,631	669	92	255	717	.....	260	437	4,061	1,042
5	295	157	7	154	237	520	285	47	1,702	194
28	2,287	464	40	927	1,564	680	468	412	6,842	—1,283
70	1,331	476	96	143	545	517	317	77	3,502	1,104
85	2,013	987	156	237	1,184	652	439	773	6,441	23
7	722	241	32	1,230	858	560	88	160	3,891	1,809
30	892	219	45	949	377	.....	263	331	3,076	—165
43	557	492	104	592	742	553	147	153	3,340	1,659
88	2,863	614	490	1,000	900	.....	541	.....	6,408	3,844
77	2,733	676	311	120	582	.....	123	203	4,748	1,826
45	1,256	391	31	1,353	404	.....	296	256	3,987	1,479
47	589	327	216	135	390	858	107	39	2,661	1,195
65	725	722	27	58	881	3,098	278	634	6,423	— 97
79	2,591	941	92	144	440	.....	271	562	5,041	—400
76	1,518	911	231	60	693	.....	259	667	4,339	512
39	1,605	368	63	378	1,445	.....	220	498	4,577	1,143
81	1,872	804	59	393	715	753	96	.....	4,692	4,030
92	1,274	728	127	4,375	428	836	339	263	8,370	3,867
Total	26,754	10,187	2,219	12,503	13,102	9,027	4,797	5,512	84,101	21,782
Average	1,486	566	123	695	729	501	+266	306	4,672	1,210
Per cent	31·8	12·1	2·7	14·9	15·6	10·7	5·7	6·5	100·0	—

TABLE 7.—CAPITAL INVESTED PER RANCH; CAPITAL, ACRES AND MAN UNITS PER SHEEP UNIT, DEATH LOSS; 21 SHEEP RANCHES BOW SLOPE AND TILLEY EAST AREA OF SOUTHERN ALBERTA: THREE-YEAR AVERAGE, 1929–1931.

Ranch number	Value land	Value sheep	Value other live stock	Value buildings and improvements	Value machinery and equipment	Value feed	Total investment	Capital per sheep unit	Acres per sheep unit	Sheep units per man unit	Percentage death loss
	$	$	$	$	$	$	$	$	(acres)		%
3	1,024	1,623	2,293	576	1,465	297	7,278	10·72	7·1	340	8·3
44	1,634	7,866	307	1,566	650	395	12,418	11·10	11·7	395	4·3
99	2,795	18,687	627	2,205	2,647	1,189	28,150	10·44	12·2	568	2·6
93	2,849	18,197	200	1,151	1,123	559	24,079	9·01	8·4	641	6·2
72	2,704	13,115	504	2,296	2,824	735	22,178	12·33	12·2	526	3·8
20	5,363	7,083	200	1,637	924	497	15,704	16·83	7·5	386	7·8
15	2,392	4,822	100	1,608	301	95	9,318	13·03	9·5	452	3·3
100	9,647	19,527	2,434	8,353	4,222	2,170	46,353	14·39	6·1	758	3·6
87	5,119	15,079	299	1,881	1,074	354	23,806	10·92	9·7	638	6·2
84	3,069	17,544	1,348	3,931	2,149	2,860	30,901	12·71	11·1	678	4·8
78	4,817	13,834	1,264	3,183	2,106	1,235	26,439	11·95	10·0	577	4·7
34	1,790	6,040	1,061	1,210	848	687	11,636	11·28	8·8	427	3·6
33	9,652	6,527	1,173	4,348	2,909	776	25,385	24·41	5·3	290	5·4
16	1,655	4,631	339	845	917	161	8,548	11·97	8·3	285	4·6
4	1,652	899	787	1,348	852	253	5,791	17·60	8·8	232	12·2
18	2,052	6,969	937	3,948	2,875	774	17,555	15·16	11·9	339	7·9
49	.....	9,761	356	2,242	1,169	323	13,857	9·83	11·9	457	3·7
96	22,172	32,896	3,581	12,828	4,917	5,051	81,445	15·32	10·4	769	4·3
102	26,452	23,359	1,157	8,548	3,384	4,943	67,843	20·55	5·0	381	5·1
50	4,800	10,374	330	3,200	1,487	1,698	21,889	13·87	8·4	421	3·5
67	24,909	7,160	767	5,091	2,845	498	41,270	35·24	10·4	413	6·8
Total	136,547	245,993	20,064	71,995	41,688	25,550	541,837	—	—	—	—
Average	6,502	11,714	955	3,428	1,985	1,217	25,801	14·26	9·2	502	4·8
Per cent	25·2	45·4	3·7	13·3	7·7	4·7	100·0	—	—	—	—

TABLE 8.—RECEIPTS PER RANCH; PERCENTAGE OF LAMB CROP; WEIGHT OF LAMBS AND FLEECE 21 SHEEP RANCHES BOW SLOPE AND TILLEY EAST AREA OF SOUTHERN ALBERTA; THREE-YEAR AVERAGE, 1929–1931.

Ranch number	Cash receipts			Non-cash receipts		Total receipts	Weight fleece	Return per pound wool	Weight lambs marketed	Return per pound lamb	Percentage lamb crop
	Lamb returns	Wool returns	Other cash income	Increase sheep inventory	Increase other inventories						
	$	$	$	$	$	$	pounds	cents	pounds	cents	%
3	308	187	920	257	47	1,719	8·0	9·6	67·6	5·6	101·3
44	1,840	927	274	1,171	140	4,352	9·5	9·5	74·1	6·0	80·9
99	3,972	2,107	1,899	780	532	9,290	8·4	9·7	66·3	5·7	81·0
93	3,635	2,003	364	2,213	647	8,862	8·9	9·3	67·8	5·6	79·1
72	4,287	1,687	509	756	68	7,307	9·4	10·4	62·2	6·0	89·2
20	1,501	618	7	2,200	368	4,694	8·9	8·0	68·4	5·0	77·1
15	922	568	49	1,005	.....	2,544	9·1	9·1	70·1	5·1	81·9
100	3,887	2,583	3,210	11	84	9,775	8·5	11·4	64·5	5·2	62·6
87	3,202	1,548	1,806	1,550	323	8,429	7·4	10·1	68·8	5·6	87·0
84	2,234	1,527	1,687	3,182	706	9,336	7·5	9·2	71·4	5·3	72·6
78	2,564	1,452	626	2,255	312	7,209	8·7	8·9	69·1	5·3	80·4
34	1,624	710	674	940	18	3,966	9·6	9·0	72·3	5·7	94·0
33	1,350	800	1,005	1,214	224	4,593	9·97	9·2	76·0	5·4	91·4
16	613	470	121	978	94	2,276	8·5	8·8	66·8	5·4	74·1
4	158	114	148	57	117	594	7·7	10·2	69·9	5·8	71·0
18	1,021	658	599	2,037	294	4,609	8·4	8·8	62·0	5·1	74·9
49	1,439	1,151	540	1,921	58	5,109	9·5	9·1	64·1	5·9	87·4
96	7,187	3,561	560	13,208	671	25,187	9·25	8·4	73·1	4·9	84·5
102	5,202	2,590	6,753	942	921	16,408	8·6	9·8	62·5	6·3	71·1
50	1,516	1,217	2,332	926	569	6,560	8·56	9·5	67·6	5·7	78·1
67	2,662	810	737	.....	28	4,237	9·0	9·8	61·5	5·9	81·3
Total	51,124	27,288	24,820	37,603	6,221	147,056	—	—	—	—	—
Average	2,434	1,299	1,182	1,791	296	7,002	8·7	9·4	67·5	5·5	79·5
Per cent	34·8	18·6	16·8	25·6	4·2	100·0	—	—	—	—	—

TABLE 9.—EXPENSES PER RANCH, 21 SHEEP RANCHES, BOW SLOPE AND TILLEY EAST AREA OF SOUTHERN ALBERTA, THREE-YEAR AVERAGE, 1929-1931.

Ranch number	Hired labour and board	Lease and taxes	Feed and salt purchased	Live-stock purchased	Other expenses	Family labour	Depre-ciation	De-crease inven-tories	Total expense	Receipts less expenses
	$	$	$	$	$	$	$	$	$	$
3	39	102	157	35	210	573	136	591	1,843	— 124
44	1,587	805	386	276	545	.....	74	59	3,732	620
99	2,442	1,262	604	108	1,000	938	246	207	6,807	2,483
93	2,002	1,344	448	305	1,207	788	72	102	6,268	2,594
72	2,191	920	347	953	624	.....	291	182	5,508	1,799
20	1,157	376	232	1,897	632	.....	54	27	4,375	319
15	468	54	122	93	148	.....	88	.....	973	1,571
100	2,236	1,212	2,193	1,828	945	800	553	1,079	10,846	—1,071
87	2,155	856	197	57	998	.....	101	794	5,158	3,271
84	1,642	1,429	104	1,044	1,356	833	186	265	6,859	2,477
78	1,666	272	135	141	686	433	162	409	3,904	3,305
34	1,088	56	74	218	471	.....	70	470	2,447	1,519
33	1,062	343	176	176	747	512	254	187	3,457	1,136
16	643	237	99	18	326	248	94	123	1,788	488
4	110	78	39	19	191	150	94	145	826	— 232
18	1,929	107	192	1,117	888	.....	232	55	4,520	89
49	935	385	174	33	473	525	164	48	2,737	2,372
96	4,883	2,675	823	9,401	2,231	.....	432	1,468	21,913	3,274
102	5,119	1,420	843	1,386	2,465	960	236	861	13,290	3,118
50	1,860	732	192	1,018	903	195	118	184	5,202	1,358
67	792	422	534	40	656	500	396	1,127	4,467	— 230
Total	36,006	15,087	8,071	20,163	17,702	7,455	4,053	8,383	116,920	30,136
Average	1,715	718	384	960	843	355	193	399	5,567	1,435
Per cent	30·8	12·9	6·9	+17·2	15·1	6·4	3·5	7·2	100·0	—

TABLE 10.—CAPITAL INVESTED PER RANCH; CAPITAL, ACRES AND MAN UNITS PER SHEEP UNIT, DEATH LOSS 21 SHEEP RANCHES CHIN COULEE AND MILK RIVER AREA OF SOUTHERN ALBERTA, THREE-YEAR AVERAGE, 1929-1931.

Ranch number	Value land	Value sheep	Value other live stock	Value buildings and improve-ments	Value ma-chinery and equip-ment	Value feed	Total invest-ment	Capital per sheep unit	Acres per sheep unit	Sheep units per man unit	Per-centage death loss
	$	$	$	$	$	$	$	$	(acres)		%
75	2,735	11,668	549	2,765	3,873	1,702	23,292	13·53	4·6	390	6·2
59	1,894	6,558	122	106	401	278	9,359	9·76	5·2	411	4·8
51	34,046	8,477	2,142	9,954	3,852	2,877	61,348	43·26	8·4	309	6·1
155	18,777	19,943	521	3,723	1,352	1,408	45,724	17·70	4·6	492	3·0
66	1,639	10,481	110	1,861	943	393	15,427	10·54	3·3	462	5·1
24	613	6,129	160	1,387	982	482	9,753	12·15	8·8	385	4·6
105	32,043	33,086	767	13,957	2,532	1,463	83,848	15·98	6·0	594	3·4
95	4,487	14,301	490	3,512	1,176	1,158	25,124	11·76	4·8	712	2·8
68	1,253	11,772	1,394	1,947	1,681	2,153	20,200	10·48	9·0	526	3·6
90	20,340	11,845	398	3,660	1,158	1,861	39,262	20·62	3·7	618	4·6
101	16,699	27,040	1,965	5,301	1,975	708	53,688	13·94	4·1	625	7·3
86	16,392	12,310	1,035	4,608	2,826	919	38,090	18·00	5·1	445	6·5
52	2,507	7,578	353	3,493	589	1,114	15,634	14·15	7·5	349	4·5
19	3,900	4,675	463	2,100	1,549	768	13,455	20·17	5·3	258	8·1
107	11,953	24,048	350	8,047	1,520	1,658	47,576	12·96	11·3	595	5·1
40	6,219	7,258	383	1,781	729	548	16,918	16·88	4·0	523	6·3
38	6,878	11,774	283	3,122	1,007	1,240	24,304	14·15	6·4	557	7·8
98	2,510	16,730	61	1,490	1,982	1,067	23,840	10·28	5·0	568	4·1
91	8,848	15,512	1,030	1,152	2,246	5,000	33,788	14·54	5·4	489	2·6
73	19,386	11,198	500	5,614	2,048	571	39,317	20·16	5·2	544	4·9
104	31,212	28,245	1,855	8,788	2,523	5,307	77,930	18·25	7·3	458	5·2
Total	244,331	300,628	14,931	88,368	36,944	32,675	717,877	—	—	—	—
Average	11,635	14,316	711	4,208	1,759	1,556	34,185	15·90	6·1	503	4·9
Per cent	34·0	41·9	2·1	12·3	5·1	4·6	100·0	—	—	—	—

TABLE 11.—RECEIPTS PER RANCH; PERCENTAGE OF LAMB CROP; WEIGHT OF LAMBS AND FLEECE; 21 RANCHES CHIN COULEE AND MILK RIVER AREA SOUTHERN ALBERTA; THREE-YEAR AVERAGE, 1929-1931.

Ranch number	Cash receipts			Non-cash receipts		Total receipts	Weight fleece	Return per pound wool	Weight lambs marketed	Return per pound lamb	Per centage-lamb crop
	Lamb returns	Wool returns	Other cash income	Increase sheep inventory	Increase other inventories						
	$	$	$	$	$	$	pounds	cents	pounds	cents	%
75	2,423	1,294	1,155	1,281	484	6,637	7·6	11·1	62·6	5·6	76·1
59	1,424	724	325	420	203	3,096	7·6	10·8	65·4	5·3	76·8
51	2,281	859	4,113	481	1,583	9,317	8·0	9·5	68·4	6·1	74·2
155	5,628	1,952	698	1,459	406	10,143	7·9	10·0	66·1	5·8	76·3
66	1,526	1,014	236	962	44	3,782	7·3	9·8	59·4	5·6	68·4
24	901	700	72	1,622	372	3,667	10·1	9·3	65·1	5·8	75·3
105	5,435	3,950	5,663	3,145	170	18,363	8·7	9·1	64·7	5·6	80·0
95	3,280	1,410	1,189	780	183	6,842	7·3	9·4	68·4	5·9	73·9
68	2,972	1,263	2,537	324	161	7,257	8·2	9·9	66·2	5·2	78·6
90	1,846	1,361	1,418	452	561	5,638	7·9	9·8	63·2	5·2	62·6
101	4,058	3,072	1,557	1,467	268	10,422	8·3	10·8	60·7	5·2	66·5
86	2,185	1,200	2,264	367	146	6,162	6·9	10·2	57·4	5·6	72·6
52	1,644	754	653	211	307	3,569	7·6	9·6	64·9	4·9	80·8
19	1,448	453	889	670	111	3,571	8·0	9·6	68·9	5·4	82·9
107	5,418	3,484	7,067	187	333	16,489	9·0	11·2	68·2	5·8	81·2
40	1,690	694	438	870	124	3,816	8·3	9·3	63·4	5·1	76·8
38	2,720	1,367	67	1,158	.....	5,312	8·4	9·9	69·4	5·1	77·6
98	3,256	1,590	1,705	462	136	7,149	7·2	10·0	57·2	5·8	63·8
91	3,338	1,512	3,308	1,733	676	10,567	7·5	9·6	66·0	5·3	85·4
73	2,426	1,424	1,153	551	1	5,555	8·5	10·0	58·5	5·1	74·3
104	5,864	3,415	4,682	1,836	252	16,049	8·5	10·2	65·3	5·5	80·9
Total	61,763	33,492	41,189	20,438	6,521	163,403	—	—	—	—	—
Average	2,941	1,595	1,961	973	311	7,781	8·1	10·0	64·3	5·5	75·4
Per cent	37·8	20·5	25·2	12·5	4·0	100·0	—	—	—	—	—

TABLE 12.—EXPENSES PER RANCH; 21 SHEEP RANCHES, CHIN COULEE AND MILK RIVER AREA, SOUTHERN ALBERTA; THREE-YEAR AVERAGE 1929-1931.

Ranch number	Hired labour and board	Cash expense		Live-stock purchased	Other expenses	Non-cash expense			Total expense	Receipts less expenses
		Lease and taxes	Feed and salt purchased			Family labour	Depre-ciation	De-crease inven-tories		
	$	$	$	$	$	$	$	$	$	$
75	1,863	415	102	824	1,386	380	221	212	5,403	1,234
59	233	120	96	89	150	473	32	166	1,359	1,737
51	3,003	633	58	1,036	2,180	.....	506	182	7,598	1,719
155	3,182	690	739	724	580	225	227	13	6,380	3,763
66	1,338	289	107	108	521	367	63	13	2,806	976
24	302	176	270	53	461	380	71	163	1,876	1,791
105	6,718	1,459	754	3,006	1,376	.....	428	103	13,844	4,519
95	1,002	430	144	78	391	720	204	177	3,146	3,696
68	2,357	477	275	865	575	.....	191	222	4,962	2,295
90	1,846	429	304	446	525	.....	59	604	4,213	1,425
101	4,798	1,163	573	600	1,046	.....	175	268	8,623	1,799
86	2,310	603	349	392	839	417	320	1,656	6,886	−724
52	1,262	292	138	140	163	297	142	22	2,456	1,113
19	980	222	84	863	506	.....	189	292	3,136	435
107	4,972	2,068	1,648	25	825	.....	316	3,951	13,805	2,684
40	989	231	60	1,833	290	.....	67	197	3,667	149
38	559	496	15	167	621	1,000	85	227	3,170	2,142
98	3,128	806	160	2,117	713	.....	89	558	7,571	−422
91	2,655	905	315	303	500	460	222	866	6,226	4,341
73	1,818	621	78	300	890	187	232	241	4,367	1,188
104	5,107	1,442	536	163	963	1,600	245	2,325	12,381	3,668
Total	50,422	13,967	6,805	14,132	15,501	6,506	4,084	12,458	123,875	39,528
Average	2,401	665	324	673	738	310	195	593	5,899	1,882
Per cent	40·7	11·3	5·5	11·4	12·5	5·3	3·3	10·0	100·0	

TABLE 13.—CAPITAL INVESTED PER RANCH; CAPITAL, ACRES, AND MAN UNITS PER SHEEP UNIT; DEATH LOSS 20 SHEEP RANCHES LETHBRIDGE AND CARDSTON AREA OF SOUTHERN ALBERTA, THREE-YEAR AVERAGE, 1929–1931.

Ranch number	Value land	Value sheep	Value other live stock	Value buildings and improvements	Value machinery and equipment	Value feed	Total investment	Capital per sheep unit	Acres per sheep unit	Sheep units per man unit	Percentage death loss
	$	$	$	$	$	$	$	$	(acres)		%
97	.....	17,498	371	849	472	1,616	20,806	8·67	4·5	640	8·1
109	.....	32,522	1,092	4,169	3,693	3,031	44,507	9·65	10·5	638	5·8
94	.....	22,069	2,598	3,022	1,884	1,451	31,023	10·71	5·87	526	5·3
108	.....	28,889	540	2,535	1,590	2,261	35,815	7·69	4·3	698	5·0
74	.....	6,153	15,610	1,630	1,847	2,296	837	28,373	11·77	2·8	688	8·9
106	.....	12,463	19,005	2,462	5,537	4,391	2,703	46,561	13·84	9·3	546	8·4
6	.....	9,046	2,951	1,285	2,702	1,410	1,454	18,848	37·03	1·8	321	17·0
41	..	15,936	6,919	2,520	5,064	1,371	1,797	33,607	25·56	2·0	415	5·5
82	.....	21,763	13,480	1,221	4,237	2,819	3,260	46,780	20·42	2·0	585	6·6
14	.....	9,712	5,223	5,522	3,008	2,617	2,905	28,987	21·50	1·5	368	7·7
89	.....	32,176	15,000	2,125	5,824	3,100	1,852	60,077	25·22	4·1	493	11·6
8	.....	5,493	3,889	902	2,507	2,123	822	15,736	24·06	3·8	262	12·1
61	..	8,697	12,159	492	3,303	1,406	1,073	27,127	14·18	3·0	620	4·8
103	.....	9,956	38,958	450	2,044	1,089	2,789	55,286	10·22	2·2	1,000	4·5
56	.....	6,863	7,030	1,798	4,137	1,952	1,525	23,905	18·06	1·7	756	7·0
25	.....	1,548	5,339	357	1,452	1,107	1,329	11,132	12·97	2·4	381	5·6
71	.....	6,136	11,595	2,992	3,934	2,875	1,969	29,501	14·40	1·5	793	6·2
32	.....	26,883	5,467	1,857	3,117	2,468	1,719	41,511	29·23	2·11	631	2·3
157		20,255	13,262	1,204	1,745	2,935	1,771	41,172	20·96	3·26	575	5·8
153		12,079	7,628	1,178	3,921	1,781	863	27,450	24·36	6·70	314	5·9
Total	....	205,159	285,090	32,596	64,954	43,379	37,026	668,204	—	—	—	—
Average	.....	10,258	14,254	1,630	3,248	2,169	1,851	33,410	14·82	4·43	580	5·92
Per cent	.....	30·7	42·7	4·9	9·7	6·	5·5	100·0	—	—	—	—

TABLE 14.—RECEIPTS PER RANCH, PERCENTAGE OF LAMB CROP, WEIGHT OF LAMBS AND FLEECE, 20 SHEEP RANCHES, LETHBRIDGE AND CARDSTON AREA, SOUTHERN ALBERTA, THREE-YEAR AVERAGE, 1929–1931.

Ranch number	Cash receipts			Non-cash receipts		Total receipts	Weight fleece	Return per pound wool	Weight lambs marketed	Return per pound lamb	Percentage lamb crop
	Lamb returns	Wool returns	Other cash income	Increase sheep inventory	Increase other inventories						
	$	$	$	$	$	$	pounds	cents	pounds	cents	%
97	.....	3,729	1,857	303	1,145	201	7,235	7·5	11·25	63·6	5·18	69·8
109	.....	9,605	3,303	1,554	.....	290	14,752	7·1	10·1	62·4	5·36	68·04
94	.....	3,417	1,628	233	1,893	827	7,998	7·4	9·2	66·4	5·2	70·9
108	.....	5,750	4,400	5,784	999	322	17,255	7·6	13·2	63·1	5·8	66·4
74	.....	3,766	1,761	898	988	220	7,633	8·2	10·2	61·6	6·1	76·1
106	.....	5,554	3,000	6,689	479	1,364	17,086	7·8	13·3	61·2	6·4	61·4
6	.....	522	292	959	726	184	2,683	9·1	9·8	71·8	5·9	62·8
41	.....	2,700	803	1,367	1,353	75	6,298	8·1	11·35	71·6	5·2	85·2
82	.....	2,703	1,591	230	1,033	257	5,814	6·7	12·7	60·8	5·3	69·6
14	.....	667	470	1,604	1,431	465	4,637	7·5	10·2	61·4	5·6	83·0
89	.....	2,065	1,486	2,725	202	135	6,613	7·2	10·2	59·3	5·3	66·8
8	.....	750	362	1,257	507	312	3,188	7·5	9·9	64·5	6·2	82·2
61	.....	1,313	1,250	649	1,432	249	4,893	7·2	10·7	58·8	5·7	66·6
103	.....	5,768	4,664	1,244	4,747	420	16,843	7·7	11·9	69·0	5·4	62·6
56	.....	1,124	1,072	2,420	824	411	5,851	7·8	12·6	57·9	5·4	53·4
25	.....	1,225	525	167	612	240	2,769	7·2	10·04	64·1	5·4	83·0
71	.....	2,461	1,050	1,422	841	456	6,230	7·5	9·4	67·1	5·4	78·6
32	.....	1,162	578	1,201	956	744	4,641	8·4	10·41	61·8	5·4	90·2
157	.....	1,861	1,266	3,428	1,578	327	8,460	7·3	10·18	62·0	5·7	74·4
153	.....	2,415	793	793	122	75	4,198	7·8	10·70	62·4	5·7	76·4
Total	....	58,557	32,151	34,927	21,868	7,574	155,077	—	—	—	—	—
Average	.....	2,928	1,608	1,746	1,093	379	7,754	7·5	11·2	63·6	5·6	69·4
Per cent	.....	37·8	20·7	22·5	14·1	4·9	100·0	—	—	—	—	—

TABLE 15.—EXPENSES PER RANCH; 20 SHEEP RANCHES, LETHBRIDGE AND CARDSTON AREA, SOUTHERN ALBERTA; THREE-YEAR AVERAGE, 1929–1931.

Ranch number	Hired labour and board	Cash expense		Live-stock purchased	Other expenses	Non-cash expense			Total expense	Receipts less expenses
		Lease and taxes	Feed and salt purchased			Family labour	Depre-ciation	De-crease inven-tories		
	$	$	$	$	$	$	$	$	$	$
97	2,593	1,467	297	655	593	.....	35	1,215	6,855	380
109	5,853	2,907	836	359	1,437	.....	394	2,016	13,802	950
94	3,914	2,118	1,153	250	1,321	.....	231	165	9,152	—1,154
108	3,732	2,000	2,027	740	654	820	207	3,630	13,810	3,445
74	2,182	397	1,124	713	646	.....	250	251	5,563	2,070
106	4,097	495	646	1,292	1,871	.....	146	5,412	13,959	3,127
6	268	185	13	299	481	77	125	109	1,557	1,126
41	1,603	665	61	1,437	932	160	250	288	5,396	902
82	2,310	775	225	292	790	277	258	.....	4,927	887
14	832	268	60	220	544	907	317	537	3,685	952
89	2,987	775	583	108	1,680	.....	227	432	6,792	—179
8	297	297	20	76	639	570	204	597	2,700	488
61	1,409	498	187	150	768	300	163	207	3,682	1,211
103	5,445	1,200	1,345	383	684	.....	94	444	9,595	7,248
56	1,514	821	75	845	1,024	.....	115	620	5,014	837
25	900	578	101	45	417	.....	81	145	2,267	502
71	1,155	1,150	104	183	813	140	331	.....	3,876	2,354
32	228	600	77	2	604	650	308	66	2,535	2,106
157	1,307	664	89	93	1,803	800	48	252	5,056	3,404
153	1,430	435	156	333	573	540	243	226	3,936	262
Total	44,056	18,295	9,179	8,475	18,274	5,241	4,027	16,612	124,159	30,918
Average	2,203	915	459	424	914	262	201	830	6,208	1,546
Per cent	35·5	14·7	7·4	6·8	14·7	4·2	3·3	13·4	100·0	

APPENDIX 3

TABLE 1.—SUMMARY OF EFFICIENCY FACTORS BY AREAS, 100 SHEEP RANCHES WESTERN CANADA, THREE-YEAR AVERAGE, 1929–1931.

Item	British Columbia	Saskat-chewan	Alberta	Summary of Alberta and Saskat-chewan	Areas in Alberta		
					Bow Slope and Tilley East	Chin Coulee and Milk River	Leth-bridge and Cardston
Number of ranches	20	18	62	80	21	21	20
Average weight fleece (pounds)	8·11	7·98	8·11	8·08	8·74	8·13	7·53
Price wool per pounds (cents)	7·70	9·71	10·22	10·13	9·45	10·02	11·21
Average weight lambs (pounds)	81·43	63·43	64·96	64·72	67·48	64·32	63·57
Price, per pound, lamb (cents)	8·30	5·52	5·53	5·53	5·53	5·50	5·56
Per cent, lamb crop	92·01	79·8	74·5	75·39	79·50	75·44	69·36
Ewes, per ram	46·16	47·5	39·72	40·85	41·74	42·34	35·94
Sheep units, per man unit	334	457	528	512	502	503	580
Acres, per sheep unit	.....	5·59	6·44	6·27	9·22	6·10	4·43
Capital per sheep unit (dollars)	20·48	20·46	15·04	16·10	14·26	15·90	14·82
Per cent death loss, rams	13·95	14·82	13·60	13·78	14·78	13·21	13·12
Per cent death loss, total flock	7·8	4·91	5·2	5·14	4·75	4·86	5·92

APPENDIX 4

Form B

1934

WESTERN CANADIAN CONTRACT FOR MARKETING BREEDING EWES

For use where the Rancher and Farmer deal directly with one another without the assistance of a supervisor or third party, and use the "Commodity-cash-equivalent" basis of sale.

AGREEMENT OF SALE

MEMORANDUM OF AGREEMENT made this day of 193

—between—

..... of .....

Hereinafter called the Rancher, OF THE FIRST PART,

—and—

..... of .....

Hereinafter called the Farmer, OF THE SECOND PART,

FOR THE SALE OF BREEDING EWES

WHEREAS the Rancher owns breeding ewes which he desires to sell to farmers, and

WHEREAS the Farmer carries on farming operations in the district of ..... and has sufficient feed, water and shelter for said ewes and agrees to provide the necessary care and management of sheep.

NOW THEREFORE THIS AGREEMENT WITNESSETH:

1. Definitions—The weighted average price of all lambs sold between August 15th and September 30th, inclusive, on the Calgary and Moose Jaw stockyards as computed from official records by the Economics Branch of the Federal Department of Agriculture shall hereinafter, for the purposes of this contract, be known as the "Western Lamb Price." This price shall be computed each year, and the poundage of lamb due in any one year multiplied by the Western Lamb Price for that year shall be known as the "Cash Equivalent" of the poundage of lamb.

2. The Rancher agrees to deliver to his nearest shipping point and the Farmer agrees to accept ..... head breeding ewes of the respective ages set out in Clause 4 of this agreement.

3. The Farmer agrees to pay to the Rancher the cash equivalent of ..... pounds of lamb on or before November 1st, 193.., and the cash equivalent of.....pounds of lamb on or before November 1st, 193.., as set out in Clause 4.

4. While the schedule at the end of this agreement may be used as a guide, the poundage of lambs stated in the schedule forming part of this Clause, No. 4 has been mutually agreed to by the parties concerned, and is set in accordance with the age and quality of the ewes.

Ages of Ewes	Number Sold	Total Poundage of Lamb	Poundage due on or before November 1st	
			First Year	Second Year
1s				
2s				
3s				
4s				
5s				
6s				
Old Ewes				
Total				

5. The cash equivalent of the total poundage of lamb may be paid by the Farmer to the Rancher on or before November 1st in the year following the date of delivery of the ewes if the Farmer so desires to obtain clear title at the end of the first year.

6. All one, two, three, four, five and six year old ewes are guaranteed as sound breeding ewes by the Rancher, and when ewes of unknown age or quality are sold under this agreement, they shall be known as old ewes.

7. The Farmer takes delivery at the Rancher's shipping point and assumes all responsibility for death loss, freight or any other charges from the time he takes delivery. He agrees to purchase a sufficient number of rams of good quality, and shear and dip at the customary time.

8. The title and ownership of all ewes and their increase shall remain in the Rancher's name until such time as this agreement is completed or satisfactorily terminated, and the Farmer agrees not to move any of the sheep from his farm without the written consent of the Rancher or his agent. All wool produced shall be the property of the Farmer. When lambs or other sheep are sold they shall be marketed in the joint name of the Rancher and the Farmer, and the cash equivalent of the poundage of lamb due to the Rancher shall be the first claim on such revenue.

9. The Farmer agrees to practise efficient management and provide feed, water, shelter and care at lambing time, etc., in accordance with established methods of handling sheep. In the event of wilful neglect, the Rancher may demand re-delivery of the sheep, and, on failure to deliver, the Farmer agrees that the Rancher may remove the said sheep without hindrance, and the cost of removing shall be charged to the Farmer and withheld from the consideration due him when a settlement is made.

10. Should dispute arise in regard to any of the provisions enumerated in any part of this agreement, the matter or matters in dispute, if the Farmer and Rancher are unable to agree, shall be arbitrated by a board or committee of three who shall have authority to set prices and deal with the matters as they see fit. Such committee shall consist of one to be selected by the Rancher, one by the Farmer, and a third chosen by these two so selected, and it is mutually agreed by the parties to this agreement that the decision of such committees shall be final and binding upon all parties to the agreement. The place where such dispute shall be settled shall be at the discretion of the committee of arbitration.

11. The Farmer agrees for the protection of the Rancher to give a proper lien note on all or any ewes taken under this agreement and their increase. The said lien note to be in full force and effect until the purchase price as set forth in this agreement for the said ewes be paid in full. Rancher and Farmer and references thereto herein shall include the executors, administrators and assigns of the Rancher and Farmer respectively, and the said terms and references thereto in the singular number and masculine gender shall also include the plural number and feminine gender when the context so requires, and all covenants shall be construed as being joint and several.

IN WITNESS WHEREOF the parties have hereunto set their hands and seals at ....., in the Province of ....., on the day and date first mentioned.

SIGNED, SEALED AND DELIVERED
in the presence of:

.....	.....
Witness	*Sheep Rancher*
.....	.....
Witness	*Farmer*

SUGGESTED SCHEDULE OF POUNDAGE OF LAMBS

Age of Ewes	Total Poundage of Lamb per Ewe	Poundage Due on or before November 1	
		First Year	Second Year
1s	120	65	55
2s	130	70	60
3s	115	65	50
4s	95	60	35
5s	80	50	30
6s	60	40	20

For ewes more than six years of age or ewes not guaranteed, the poundage of lamb may vary from 20 to 50 pounds per ewe, and since the poundage is low, payment shall be made for the total poundage agreed upon at the end of the first year. The poundage listed in the above schedule may be varied according to the quality of the ewes.

APPENDIX 5

1934 WESTERN CANADIAN LAMB FEEDING CONTRACT

FORM B

For use where a Rancher or group of Ranchers and a Farmer or group of Farmers deal directly on the fattening of range feeder lambs.

AGREEMENT

MEMORANDUM OF AGREEMENT made this day of 193
between

hereinafter called the Rancher.
OF THE FIRST PART

and

hereinafter called the Sheep Feeder.
OF THE SECOND PART

WHEREAS the Rancher owns feeder lambs which he desires to let out during the winter months for feeding, fattening and finishing; and

WHEREAS the feeder carries on farming operations on Sec....., Twp....., Range....., West.....Meridian, in the district of.....and has sufficient water, shelter and feed of the proper quality for the finishing of lambs.

NOW THEREFORE THIS AGREEMENT WITNESSETH:

1. The feeder expressly warrants that he is in a position to receive lambs on his farm or feed-lot, having provided the requisite feed and equipment as prescribed by the Rancher.

2. The feeder may inspect all lambs on the sheep ranch before shipment to his feed-lot, and the Rancher may inspect the premises of the Farmer.

3. The Rancher hereby agrees to deliver.....head of feeder lambs to the Farmer's shipping point or other point mutually agreed upon and pay all charges for the cost of delivery.

4. An overnight shrink without feed and water or a 3% shrink at the Rancher's shipping point, or the equivalent of either as mutually agreed upon, will be allowed by the Rancher on the lambs when they are weighed before delivery to the feeder. The outgoing shrink on the lambs after being wholly or partly finished is to be borne in its entirety by the feeder, whether the lambs be sold locally or shipped to some distant point for marketing.

5. The feeder agrees to take delivery and to use his best efforts to fatten, finish and ship said lambs to market as directed, and shall be entitled to payment for all lambs fed to the close of the feeding period as set out in Clause 10. However, in the event of wilful neglect or shortage of feed, the Rancher may demand re-delivery of the lambs, and on failure to deliver, the feeder agrees that the Rancher may remove the said lambs without hindrance, and the cost of removing shall be charged to the feeder and withheld from the consideration due him for feeding and caring, or otherwise. The loss of lambs through death or any other causes is chargeable to account of the feeder.

6. Should dispute arise in regard to any of the provisions enumerated in any part of this agreement, the matter or matters in dispute, if the Farmer and the Rancher are unable to agree, shall be arbitrated by a board or committee of three who shall have authority to set prices and deal with the matters as they see fit. Such committee shall consist of one to be selected by the Rancher, one by the Farmer, and a third disinterested party chosen by these two so selected, and it is mutually agreed that the decision of such committee shall be final and binding upon all parties to the agreement. The place where such dispute will be settled shall be at the discretion of the committee of arbitration. The settlement shall be made only at the time of the sale of the finished lambs and in accordance with Clause 10. The percentage spread on unfinished lambs re-delivered to the Rancher shall not apply.

7. The feeder agrees that the title to, and the right to possession of the said lambs remains with the Rancher, and that he, the feeder, has no equity in the lambs other than as herein set forth.

8. The lambs shall be marketed in the joint name of the Rancher and the Feeder, but the Rancher shall determine to which market the lambs shall be shipped.

9. The cost of shipping from the feeder's shipping point to the point of sale, plus all other charges such as assembling, sorting, weighing, loading, feed in transit, commissions, etc., shall be known as handling charges. The said handling charges shall be deducted from the gross proceeds to determine the actual market value. The latter shall be known as the net return.

10. The division of proceeds shall be based on weights and the net return as follows: The initial weight of the lambs and the gain shall be both multiplied by the net return per pound of lamb. The feeder shall receive the full value of all the gain plus a percentage of the value of the initial weight. The percentage shall be the net return per pound subtracted from 12, and the result multiplied by 4, provided such percentage does not exceed 30%.

For example, if the feeder lambs average 65 pounds per lamb and the feeder puts on 30 pounds of gain per lamb, and the lambs when sold give a net return per pound of 7 cents, the 7 cents times the feeder's gain of 30 pounds equals $2.10, the 7 cents times the initial weight of 65 pounds equals $4.55. The percentage would be four times the difference between 7 and 12, or 20 per cent. Take 20% off $4.55 equals 91 cents—then the feeder receives $2.10 plus 91 cents=$3.01 per lamb, and the Rancher receives $4.55 minus 91 cents=$3.64 per lamb.

11. The percentage spread as indicated in Clause 10 is regarded as a premium to be paid for lambs in the proper condition to ship, and the sanction to ship by the Rancher or his agent is all that is required for the feeder to qualify for the spread.

IN WITNESS WHEREOF the parties hereto have set their hands and seals on the day and date first above written.

SIGNED, SEALED AND DELIVERED
in the presence of

.....	.....
Witness	*Sheep Rancher*
.....	.....
Witness	*Sheep Feeder*

APPENDIX 6

PRE-SHEARING CASH ADVANCE AGREEMENT

NO EMPLOYEE OF THE CANADIAN CO-OPERATIVE WOOL GROWERS LIMITED HAS THE AUTHORITY TO CHANGE THE PRINTED TERMS OF THIS CONTRACT

Date.....

Place.....

In consideration of ..... Dollars (not in excess of ..... cents per head on the security of all my/our ..... wool now growing) received by me/us as cash advance I/we ..... of ..... agree to deliver to the Canadian Co-operative Wool Growers, Limited, through the ..... free on board cars at .... on or about ..... 19.., our entire 19.. clip of wool from about ..... sheep, about ..... pounds, subject to the following terms and conditions:

My/our signed Producer's Agreement with the .... is effective on my/our wool clip this year.

Balance of the usual Advance to be paid when wool shipped.

Final Settlement to be made following the grading and sale of the wool.

Black wool to be packed separately.

Corral Sweepings and Murrain Dead Wool are not included in this contract.

I/we agree to pay interest on the above mentioned advance and any additional advance at the rate of 6% per annum.

I/we guarantee wool to be in good merchantable condition in all respects. Well Tied, Honestly Packed, Dry and Free from Sisal Twine, and an excessive amount of BURRS, SAND or SPEAR GRASS. We will defend the title of said wool in favour of the Canadian Co-operative Wool Growers Limited against any and all persons whomsoever. Our sheep are branded .....

And for the better securing to the Canadian Co-Operative Wool Growers, Limited, repayment of the said advance, I hereby mortgage to the said Company all my said wool.

Witness .....
Signature .....
.....
For .....
Address .....
Mortgaged to .....

I/we.....holding mortgage or loan on sheep described in this contract, consent to the above Agreement as made and release all my/our rights to the wool in favour of the Canadian Co-operative Wool Growers, Limited, and acknowledge having received one dollar and other valuable considerations.

.....
.....

APPENDIX 7

SCHEDULE USED

DOMINION OF CANADA

DEPARTMENT OF AGRICULTURE — Ranch No.....

AGRICULTURAL ECONOMICS BRANCH — Year Ending.....

(SCHEDULE FOR SHEEP RANCH SURVEY IN WESTERN CANADA)

Province.....
Location.....Sec.....Tp.....R.....M.....
Operator.....
Address..... Shipping Point.....Distance.....

LAND AREA

——	Acres	Improved Value per Acre	Total Value
Owned Land—			
Pasture land			
Hay land Irrig.			
Hay land Dry			
Crop land Irrig.			
Crop land Dry			
Total			
	Acres	Cost per Acre	Total Cost
Lease Land—			
Pasture land			
Hay land Irrig.			
Hay land Dry			
Crop land Irrig.			
Crop land Dry			
Total			

Kinds of Lease Land	Acres	Value Lease per A.	Lease Cost per A.	Taxes	Total Cost
Dominion lease					
Provincial lease					
Indian Reserve					
School lands					
Hudson's Bay					
Railroad Lease					
National Forest					
Privately owned					
Abandoned Owned land					
Acres of Free Land					
Total					

What is the value of ranch including land and improvements?.....
Acres of grazing land required per sheep.....

MISCELLANEOUS RECEIPTS			LIVE STOCK SOLD							
Item	Amount	Value	Date	No.	Kind	Weight	Price	Amount	Total Expense	Net Return
Butter										
Cream										
Milk										
Eggs										
Beef										
Mutton										
Pork										
Labour										
Mach. Work										
Rent										
Br. Fees										
Hides										
Pelts										
Wood										
Mach. and Bldg. Sales										
Total										

Wool sales, lbs. (.....) (.....) (.....)

Number sheep shorn..... Date lambing started.....

Breed history and remarks.....

.....

.....

.....

.....

No. of Ewes Died	No. of Lambs Died from Docking to Marketing
Causes—	Causes—
Pois. Pl.	Wool balls
Coyotes	Dirt
Heaving	Coyotes
Bad Water	Goiter
Dogs	Dogs
Worms	
Maggots	
Blizzards	
Poverty	
On Back	
Bears	
Snags	

No. Lambs...

% L. Crop.....

LIVE STOCK RECORD

Kind	On Hand, Beginning of the Year			Purchased			Sold			Home Use	Died	On Hand at End of Year		
	No.	Av. Val.	Total Value	No.	Av. Cost	Total Cost	No.	Wt.	Value			No.	Av. Value	Total Value
Ewes														
Ewe Lambs														
Wethers														
Rams														
Lambs														
Total														
Cows														
Heifers, 1														
Heifers, 2														
Calves														
Steers														
Milk Cows														
Work Horses														
Other Horses														
Colts														
Stallions														
Sows														
Boars														
Pigs														
Poultry														

—	On Hand Beg. Yr.			Seed on Hand	Purchased*			Raised During Yr.†				Sold*			On Hand End Yr.			Fed on Ranch	Consumed by Sheep	
	Amt.	Pr.	Value		Amt.	Pr.	Value	Acres	Amt.	Pr.	Value	Amt.	Pr.	Value	Amt.	Pr.	Value		Amt.	Val.
Wild Hay																				
Oat Hay																				
S. C. Hay																				
Brome Hay																				
Timothy Hay																				
Alfalfa Hay																				
Straw																				
Silage																				
Wheat																				
Oats																				
Barley																				
Rye																				
Flax																				
Bran																				
Shorts																				
Summerfallow																				
Total																				

*Include crops held for sale by estimating value.
†Circle acres of crops also used for pasture.

LABOUR RECORD

Labour	Number of Men	Total Months	Rate	Months Boarded	Value of Board	Total Cost Labour
Herding						
Year hands						
Lambing						
Haying						
Hired Cook						
Contract Lab.						
Total						
Family Lab.						
Oper. Lab.						
Total						

Age of oper. ..... No. Children .....

Notes on labour .....

BUILDINGS AND IMPROVEMENT

Item	Value	—
Dwellings		
Office Fixtures		
Bunk Houses		
Bunk Furnishings		
Summer Camps		
Sheds, Shearing		
Sheds, Lambing		
Barns		
Granaries		
Blacksmith Shop		
Machine Shed		
Corrals & Pannels		
Dipping Tanks		
Windmills		
Wells Depth ( )		
Pipelines		
Reservoirs		
Dirt Tanks		
Silos		
Garages		
Fence (miles)		
Total		
New Bldgs. & Imp.		
Repairs during yr.		
Total		
Depreciation on bldgs.		
Buildings sold		
Total		
Net inc. or decrease		

MACHINERY AND EQUIPMENT			CURRENT EXPENSE		
Item	Value	—	Item	Total Ranch	—
Hay Machinery:					
Mowers					
Rakes					
Hayloaders					
Hay Stackers			Vet. Expense, Medicine		
Hay Tedders			Vaccine		
Hay Sleighs			Blacksmith		
Hay Slings			Hardware		
Forks			Telephone & Telegraph		
Hay Baler			Association Fees		
Hay Racks			Registration Fees		
Crop Machinery:			Breeding Fees		
Manure Spreader			Advertising		
Ploughs			Binder Twine		
Discs			Poisons		
Harrows			Fr'ting Ranch Supplies		
Drills			Buck herd		
Cultivators			Machine work hired		
Binders			Crop insurance		
Thresh. Outfit			Building Insurance		
Tractor			Water rent		
Sheep Equipment:			Contract hay—tons		
Sheep Wagons			Interest		
Camp Equip.			Forest Grazing fees		
Dock & Shear			Dip, Wool bags, twine		
Tents			Threshing		
Harness, Saddles			Seed purchased		
Automobiles			Salt, lbs. (.....)		
Trucks			Hired labour		
Cream Separator			Family labour		
Feed Grinder			Lease rental		
Wagons			Taxes		
Build. Materials			Shearing (.....)		
Scales			Feed Purchased		
Tools (small)			Gas, Oil, Licence		
Pump Engines			Repairs to Mach. & Equip.		
Range water equipment storage tanks			Repairs to fence, not labor		
			Repairs to bldgs. & imprv.		
Total			Total Current Expense		
New equip. bought			Capital Expenditure		
Repairs during year			Livestock purchased		
Total			New Mach. and Equip.		
Depreciation			New Bldgs. and Imp.		
Equip. sales, trades			Total capital expense		
Net inc. or decrease					

Value of food and fuel produced and used on ranch.....

OPERATOR'S HISTORY AND FINANCIAL PROGRESS

Birth place.....Year.....

National origin of operator.....Were you raised on a farm?.....Were there sheep on that farm?.....Full time occupations, dates (1).....Dates (2).....

.....

Years domicile in Canada.....This Province.....

This ranch.....How long did you herd without an interest in the flock?.....Years as herder on part ownership basis.....

Years as an owner.....Top grade education.....

Other education.....

What was your net worth when starting on this ranch?.....

Estimate your net worth now?.....

RANCH LIABILITIES

Type of Liability	Amount at End of Year	Amount paid during Year	Interest Rate	When Contracted	Years to Run	Source of the Loan
Real Estate Mortgage						
Chattel Mortgage						
Personal Notes						
Store accounts						
Back taxes						
Back interest						
Other debts						
Total						

Notes on range, weather conditions at the breeding and lambing seasons, etc.....

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